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# The Mining Journal

LONDON, JULY 29, 1960

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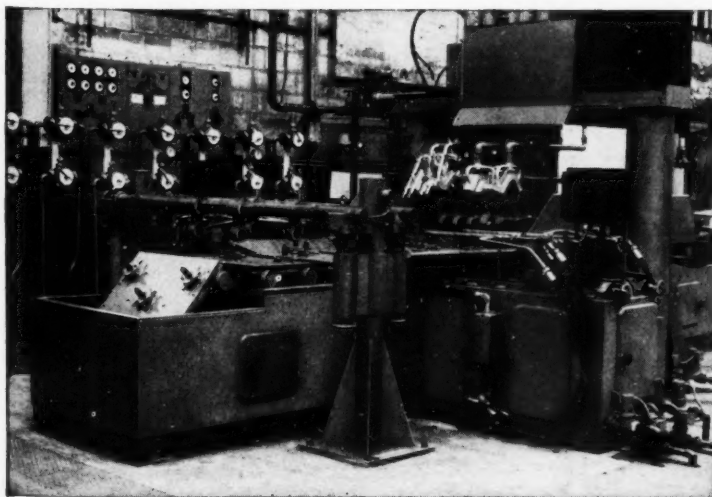
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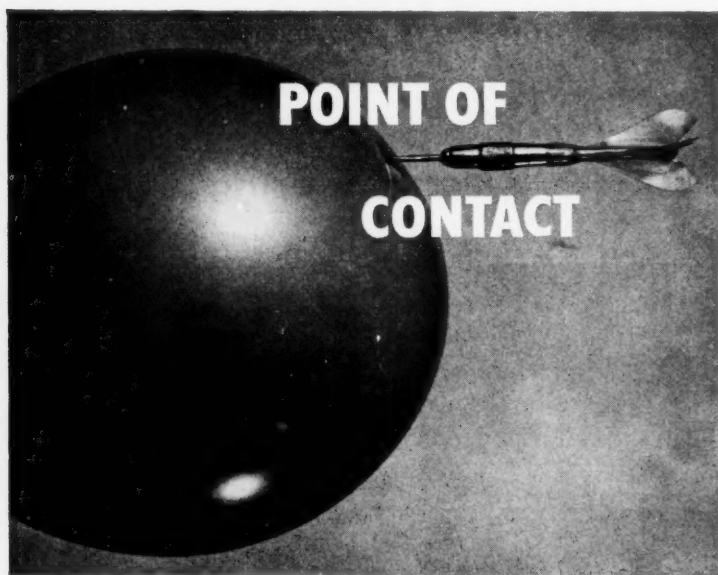
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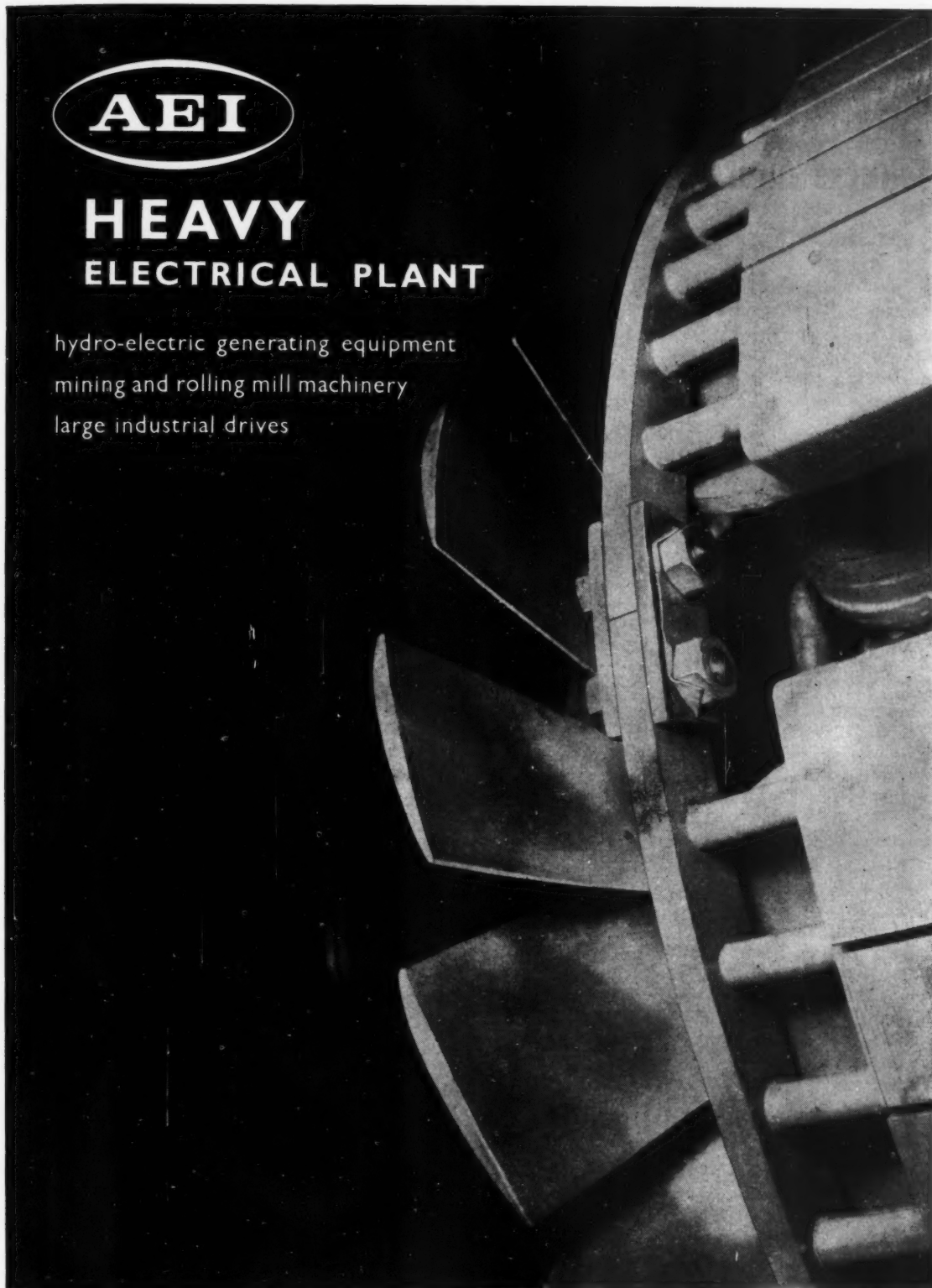
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# The Mining Journal

London, July 29, 1960

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## The Unwanted Dollar Premium

**F**ROM 1950 to the end of 1957 the history of the Canadian mining industry was one of uninterrupted expansion and during this period the value of mine products more than doubled. In 1958, however, the combination of stringent monetary policies and depressed metal prices led to a fall in both the volume and value of the Canadian mineral output.

Despite such adverse factors as the U.S. lead-zinc import quotas and the voluntary restrictions on exports of these metals, the ground lost was more than recovered in 1959, when the dollar value of the mineral output rose to the new peak of \$2,400,000,000. The past year brought little relief, however, from the tight money situation, with its restrictive effects on the raising of capital for development and exploration. Moreover, the very strength of Canada's currency has been burdensome alike to gold, base metal and other mineral producers, whose profits have been heavily eroded by the disparity between the Canadian and U.S. dollars. From the producers' standpoint this has been equivalent to a levy on all sales to the American market, which is the largest consumer of the Dominion's metal and mineral products. Last year the discount on the U.S. dollar lost Hollinger \$396,000 in gold shipments while the same company's products from its iron ore interests were mulcted to the extent of no less than \$3,000,000.

Particularly welcome to the mining industry, therefore, was the recent decline in the premium on the Canadian dollar in terms of the U.S. dollar. Early in June Canadian gold producers were receiving \$34.65 and they are now currently receiving \$34.34 per fine ounce in Canadian money, based on the price of \$35 fixed by American law. A short time ago, when the U.S. dollar was worth 95 c., they received only \$33.25 in Canadian money.

More assistance for Canada's gold mining industry was urged in the Commons at Ottawa recently, when the government proposal to extend the Emergency Gold Mining Assistance Act for another three years after December 31, 1960, was debated. The assistance paid to gold producers up to March 31 this year totalled \$131,063,000.

Forty of 53 hard rock gold mines received assistance last year and 55 per cent of the gold produced in Canada in 1959 came from mines eligible for assistance. Both production costs and output dictate the amount of assistance, which is given to mines whose production costs exceed \$26.50 an ounce up to a ceiling of \$45. The rate is based on two-thirds of the difference between the mine's production cost in excess of \$26.50 an oz. and the ceiling of \$45. It also includes two-thirds of the annual production in ounces sold to the mint. The product of the two is increased by 25 per cent to calculate the total assistance payable.



Parity between the two North American dollars will not, of course, bring relief on a sufficient scale to obviate the need for assistance, or to warrant any re-assessment of the present formula. The elimination of this particular source of profit erosion should nevertheless be of material benefit to an industry which, metaphorically speaking, has been accorded far more kicks than halfpence in the past two decades.

The premium on the Canadian dollar has also cost base mineral producers millions of dollars. A notable indication of the benefits of the falling premium was afforded by the increase of a quarter cent in the domestic price of western zinc recently announced by Cominco.

The view has been expressed in Toronto that the Bank of Canada is deliberately forcing the Canadian dollar towards parity with the U.S. dollar by adding sharply to its holdings of treasury bills and bidding up the price. On the other hand, the Société Générale, a large European banking firm with a branch in New York, has stated that the Canadian dollar would have dropped below par in terms of U.S. currency during May if Ottawa had not spent \$101,000,000 to keep it strong. The Société Générale adds that in its view a desirable discount level is the only way to solve Canada's "critical economic and financial malaise".

The decline has come when Canada has been lowering its trade deficit, which logically should strengthen the Canadian dollar. The high price of Canadian bills, however, has forced many firms that normally buy Canadian treasury bills as an investment for short-term funds to buy U.S. bills instead. At the same time, Canadian cities and provinces have been obliged to resort to the United States for funds.

Whatever the motives and present objectives of Canadian Government policy, present indications point to a continuation of the downward trend, despite the fact that there has been some strengthening of the Canadian dollar in recent weeks. Foreign exchange experts have predicted that before long the Canadian and U.S. dollars will be exchangeable on an even basis, and that by the autumn a U.S. dollar might even be worth five or perhaps ten cents more than a Canadian dollar. The effect, of course, would be to make Canadian products cheaper and more saleable in the U.S. while making American goods more expensive in Canada. Besides helping Canadian mineral exporters, this trend is thus not without significance for exporters of mining machinery and equipment in the United Kingdom, whose competitive position *vis-à-vis* the United States could be considerably strengthened by a reversal of the present relationship between the Canadian and U.S. dollars.

The disappearance of the premium on the Canadian dollar would give a timely shot in the arm to the market in Canadian mining shares, which for some time past has been under a heavy cloud which even the recovery of the industry has so far failed to dispel. There can be little doubt that, due in part to reaction from the excessive exuberance of the post-Korean boom, and partly to the Bank of Canada's policy of keeping money "tight", Canadian mining shares generally speaking today are under valued. Prospects for a revival in the next year or two are regarded as by no means unpromising, and at this juncture the additional profits to mining companies resulting from the substitution of a premium for the present discount on export earnings could give a timely stimulus to the long awaited recovery of the market.

There is, of course, another side to the picture, inasmuch as a reversal of the relative values of the Canadian and U.S. dollars would generate inflationary tendencies which the Dominion Government might be obliged to counter by accentuating its tight monetary policy. Moreover, the benefits to exporters arising from the disappearance of the premium could largely be offset by the higher cost of mining machinery and equipment, the greater part of which is imported from the United States. There is no likelihood, however, that Ottawa would allow such a situation to arise.

## THE GERMAN METAL INDUSTRIES IN 1959

Mined production of lead and zinc fell last year on 1958 totals in Federal Germany, it is stated in a report of the West German non-ferrous metals association Wirtschaftsvereinigung Nichteisen-Metalle e.V., issued from Dusseldorf recently. Output was 52,510 tonnes of lead and 82,079 tonnes of zinc mined, as against respective totals of 60,914 tonnes and 85,400 tonnes for the previous year. Short time and reduced working in the lead-zinc mining industry continued, and the percentage of refined metals based on indigenous ores fell from 45.3 per cent to 35.1 per cent in the case of lead and from 64.1 per cent to 59.3 per cent in the case of zinc. Production of mined copper rose, however, over the year from 1,049 tonnes to 1,437 tonnes.

West Germany's output of primary metals for last year (1958 totals in parentheses) included 151,200 (136,800) tonnes of refined aluminium, 210,900 (194,200) tonnes of refined copper and 71,000 (74,000) tonnes of refined copper from processing plants, 192,400 (173,400) tonnes of refined soft, fine and hard lead including output of accumulator plants, 197,100 (179,300) tonnes of refined raw and fine zinc, 19,000 (18,600) tonnes of fine zinc alloys from refineries and 2,100 (1,800) tonnes of refined tin.

Production totals for secondary metals in Federal Germany in 1959 included 19,800 (17,900) tonnes of pure aluminium, 93,300 (83,900) tonnes of aluminium alloys from re-smelting plants, 24,200 (25,000) tonnes of copper alloys, 13,500 (15,600) tonnes of refined ingot lead, 17,800 (18,600) tonnes of lead alloys, 6,100 (3,900) tonnes of fine zinc alloys from re-smelting plants and 16,100 (14,500) tonnes of fine tin alloys including solder tin.

Germany remained an important importer of metals on world markets, although in the ore field the increase in imports of copper ores over the year, from 136,576 to 137,029 tonnes (excluding pyrite residues), and of lead ores, from 129,872 to 142,965 tonnes, was balanced by drops in the import of bauxite and zinc ores. Imports of these latter materials totalled only 912,000 tonnes and 144,367 tonnes last year, respectively, as against respective totals of 1,072,167 tonnes and 180,142 tonnes in 1958. The country's imports of crude metals, however, rose all round, totals including 75,286 (59,501) tonnes of aluminium, 246,732 (231,442) tonnes of refined copper, 65,573 (46,552) tonnes of raw lead for refining plus soft and fine lead, 99,001 (73,704) tonnes of refined raw zinc, fine zinc, extra-fine zinc, cathode zinc and 17,577 (10,393) tonnes of unalloyed tin. A particular increase was noticed in the imports of metallic non-ferrous alloys. These included 14,789 (8,193) tonnes of aluminium alloys, 39,899 (27,109) tonnes of copper alloys, 1,535 (1,223) tonnes of lead alloys and 4,490 (2,730) tonnes of zinc alloys.

## POLAND PUSHES MINERAL PLANNING

In connection with the industrial expansion covered by the 1961-1965 Five-Year Plan, the Polish authorities have recently made known details of a number of projects planned to swell the production of mined materials and both metallic and non-metallic mineral products.

Lead and zinc mines are to be opened both at Trebionka and in the Olkusz district of the province of Cracow, two sites in this latter area being named in exploitation plans. The intensification of lead and zinc mining activities on the border of the Upper Silesian industrial area ties up with the planned building of a zinc and lead processing combine at Miasteczko Slaskie, in the province of Katowice, on the East German border. Plans for this combine, at present being worked on by the Bipromet projects bureau, include a concentrates unit and plant for the processing of such by-products as zinc oxide.

A total of 3,000,000,000 zloty is to be invested in the exploitation of the giant copper ore reserves between Głogów and Lignice. The building up of mining units in the area and copper processing plant is to be accelerated in a development continuation programme.

Iron ore output in Poland is to be increased by about 1,000,000 tonnes annually as part of a large-scale expansion project for the country's ferrous metals industry. Big investments, too, are planned for the production plants turning out ferrous products and semi-products. The Lenin steelworks at Nowa Huta, the Bierut plant in Częstochowa and the Warszawa refined-steel plant in the Polish capital are all to be expanded, while a completely new plant is to go up at Ostrowiec Świętokrzyski in mid-Poland and new production units at the Świerczewski steelworks at Zawadzkie, in Upper Silesia. Poland is even undertaking export contracts in the ferrous metals plant construction field, and has recently offered a complete iron and steel works with an annual capacity of 150,000 tonnes in exchange for Brazilian goods, possibly including ores. The biggest scheme on hand in the domestic expansion programme is the expansion of the Lenin plant, whose capacity is to be raised from 1,300,000 tonnes to 3,500,000 tonnes annually. A further 10,000,000,000 zloty will have to be invested in this project, into which 11,000,000,000 zloty has already been invested.

One of Poland's most important developments is that of her sulphur deposits at Tarnobrzeg, one of the largest deposits in the world. At a cost estimated at 4,500,000,000 zloty, this site is to be exploited by the building of a combine at Machów, construction work on which will be completed during the current year. Initial production of this plant will be 100,000 tonnes of sulphur, 100,000 tonnes of sulphuric acid and 200,000 tonnes of superphosphates per year. By 1965 the combine will be turning out 400,000 annual tonnes each of sulphur and sulphuric acid and 600,000 tonnes of superphosphates, while further expansion will bring output up to the final level of 1,000,000 tonnes of sulphur, 500,000 tonnes of sulphuric acid and 800,000 tonnes of superphosphates per year. After completion of this third stage the Machów combine will be producing an annual worth of 2,500,000,000 zloty. Help in the project is being granted by the Soviet Union and Czechoslovakia.

#### MINERAL PROJECTS IN BRAZIL

Tenders will be called for within the next few weeks to build the 200,000 kW. central atomic plant at the mouth of the Mambucaba River (see *The Mining Journal*, May 20, 1960). Our Brazilian correspondent states that the cost is estimated at about U.S.\$45,000,000.

Industrias Químicas Reunidas (ORQUIMA), which has been extracting and concentrating monazite sands at Rio and Victoria through a subsidiary, and processing them at Sao Paulo, has been purchased by the National Nuclear Energy Commission (CNEN) at an independent valuation. The atomically pure uranium, produced at Sao Paulo University by the Institute of Nuclear Energy, was derived from uranate of soda supplied by ORQUIMA. The latter has been producing uranium and thorium salts exclusively for CNEN, but had to suspend operations owing to an excessive accumulation of stocks and the prohibition to export.

The Molybdenum Corporation of America and the Wah Chang Trading Co. announce plans to produce concentrates of copper in Brazil, production to start within 12 months. The Wah Chang Trading Co. mines wolframite in Sao Paulo and extracts tungsten from scheelite in Rio Grande do Norte.

The Byington group of Brazil, associated with the Aluminium Co. of America (Alcoa) and the M. A. Hanna Co., are organizing an enterprise, to be known as Companhia Nacional de Alumínio, with a capital of U.S.\$32,000,000, to build a plant at Pocos de Caldas, Minas Gerais, and process bauxite from the local deposits. Initial annual capacity is fixed at 20,000,000 tons of aluminium. Brazilian consumption is in the order of 30,000,000 tons annually, of which 50 per cent is imported.

The Directors of St. John d'el Rey Mining Co. have decided to organize two companies in the municipality of Nova Lima, Minas Gerais; one will exploit the Morro Velho gold mine, the other the iron ore deposits of Aguas Claras in the same region.

An important deposit of rock salt, 100 metres deep, with estimated reserves of 10,000,000 tons, has been discovered in the Sergipe Municipality of Cotiguiba. A project to exploit it, drawn up in Paris for the proprietors, estimates possible production at 40,000 tons of sodium carbonate, 40,000 tons of caustic soda, 60,000 tons of chloric acid and 86,000 tons of bicalcium phosphate.

#### EUROPEAN COAL SITUATION

Although coal stocks still remain inordinately high in Britain, it appears that the gap between demand and supply is narrowing and that the industry can look forward to a more balanced state of affairs. At the present time there are some 34,500,000 tons of coal lying at the pitheads but it is not expected that this figure will materially increase.

On the Continent, coal stocks continue the rising trend evidenced over the last three years, the bulk of the recent increase in stockpiled coal occurring in France. Total stocks within the Pool countries are well in excess of 30,000,000 tons. In Germany and Belgium — previously hard hit by short time working — stocks have been relatively stable since the beginning of the year. In France, the coal situation has been described as critical and short time working has recently been substantial. There has been criticism of the French Government's failure to slow down the development of the Lacq natural gas field and to suspend coal imports from the Saar, but the minister responsible for the industry has insisted on following a liberal trade policy. Instead he has undertaken to consult with the unions with the object of "re-arranging" working hours in the mines; to authorize the local Coal Board to raise compensation for part time working to the level of the basic full time wage; to provide indemnities to allow older miners in the worst hit region, the southern coal-fields, to retire early; and to offer special concessions to new industries in the mining areas. These solutions, however, can only provide part of the answer and in the long term it is necessary for the government to face up to the prospect of a greatly diminished coal industry. It must be questionable whether the government may not be forced ultimately to seek the aid of the Community in at least, partially isolating the French market, following the precedent set by Belgium.

In Germany, by far the biggest coal producer in the E.C.S.C., the coal employment situation is resolving itself. At the moment almost five times as many miners are leaving the industry as are joining it. It is forecast that for the next few years there will be an annual excess of wastage over recruitment of at least 20,000 men. In fact, the situation may well ultimately revert to one of shortage of miners and also it must be borne in mind that, as it is chiefly in the younger age groups where the wastage is taking place, the average age of underground workers must accordingly rise.

# China's Mineral Resources

**I**N 1958, China ranked first in world production of antimony and tungsten and, due to quotas in other countries, second in tin production. Also becoming more prominent in the world picture, especially in respect of markets in Sino-Soviet *bloc* countries, are products such as bismuth, mercury, manganese ore and molybdenite, recent outputs of which constituted between 4 and 10 per cent of the world total. Of non-metallic minerals, production of salt, fluorite, graphite, manganese and talc ranged from 8 to 20 per cent of the world total, while cement, asbestos, mica, pyrite, and sulphur were being produced at 2 to 4 per cent of world total.

Outstanding in the mineral field are developments in the production of coal and iron and steel. Coal output is the third largest in the world and constitutes more than one-tenth of the world total, 1959 output being about five times that of the pre-1949 peak year. China is now the seventh largest world producer of iron and steel and may be fifth by 1965. Many other mineral industries are also undergoing rapid expansion and the overall Chinese mineral output, measured in terms of constant prices (1958), reached approximately \$U.S.3,000,000,000 in 1958 or more than four times the annual maximum amount produced in the pre-1949 period when Communist rule began. This has followed intensive geological work and an assurance of new ore supplies. Doubled output between 1952 and 1957 was succeeded by a forward leap in 1958 when tremendous emphasis was placed on mineral and industrial development by the introduction of the communes and the "mass line" and the transfer of up to 60,000,000 people from agriculture to the mineral industries. Consolidation took place in 1959 with a further moderate increase in mineral output.

## Present State of the Industry

Today, Communist China seems to be more than self-sufficient in most minerals, both for the present and future, though some are scarce. Reserves of coal and iron are abundant, petroleum is inadequate, though likely to improve in five to ten years; ferro-alloy minerals such as manganese, tungsten and molybdenum are abundant, but chromium and nickel have not shown much promise; copper, lead and zinc reserves are considered large enough for medium-scale operations, copper, however, being scarce enough to warrant the possible substitution of aluminium where feasible; aluminium and magnesium prospects are fairly good; antimony, tin, bismuth, mercury and salt reserves and production are excellent; sulphur supplies are moderate and phosphate ores are extensive but not fully exploited; and the resources of non-metallic minerals are diversified and large.

At present surplus Chinese minerals are being exported primarily to the Sino-Soviet *bloc* but may well find their way increasingly to Free World markets in the future. Chinese tin, exported via the Soviet Union, has already caused some concern in international tin circles.

There are many regional factors affecting mineral development in China. Manchuria has been relatively declining in importance with the growth of other areas. North China, with vast coal and iron resources, is gaining in stature; Sian, in an area of rich mineral resources, is likely to serve the development of both the Northwest and Southwest; Central China has heavy and light industries

In a report recently prepared on Communist China by the United States Bureau of Mines, K. P. Wang, Far East Specialist, emphasizes how that country's rich mineral resources are spurring its bid for industrial power. Already, in 1958, the value of mineral output was about 4.5 per cent of the gross national production and was providing the key to domestic industrial progress as well as earning foreign exchange. Steps are being taken further to implement the programme of uncovering and efficiently utilizing China's mineral resources

and diversified mineral resources; Southeast China is the heart of the tungsten and antimony industries; while Southwest China has tin, copper, mercury and some oil. The vast Northwest is yielding increasing quantities of petroleum, radioactive minerals and non-metals. Most regions have adequate resources of both coal and water power.

Management of the mineral industry in China is in the hands of a dual authority comprising the Communist Party, locally represented by the Party secretary and the cadre, and the Ministry or Provincial agency locally represented by the supervisor and the technician, who work closely together at the local as well as national level. Close relationship with the miners is maintained; there are no strikes and group competition is encouraged. Steps have been taken to improve operation technique compatible with adherence to safety regulations and experiences in technology are exchanged between areas.

Large scale pilot plants quickly follow new ideas and special design and basic construction groups develop new mines and plants. Many research organizations have been established. On the other hand there is a danger of let-down or breakdown of workers at high working pitch.

Mining and metallurgical practice in China varies from very modern to fairly primitive, semi-modern operations contributing about one-third of the mineral output. While modern plants, which produce most of the mineral products, are said by the report to be fairly up-to-date from the engineering point of view and to compare favourably with European and Japanese practices, they are lower in productivity than U.S. operations. The overall level of mineral technology has, however, advanced rapidly in the last decade.

Exploration and drilling are being carried out on an extensive scale. In late 1959, about 400,000 "geological workers" including nearly 30,000 institute-trained men were reportedly in the field prospecting, more than 6,000 drills (primarily diamond drills) being in use for exploration purposes. Aerial surveying is being applied.

Most mines can excavate vertical shafts and horizontal tunnels at monthly rates of 50 and 100 metres respectively. Advanced methods of shaft sinking are being increasingly employed. Coal mining is becoming more and more mechanized and ore treatment plants of modern design are being installed and moderately large scale mines and plants can be designed and built by the Chinese themselves so long as they are not too complicated.



## The Rise in Chinese Mineral Output during 1949-59

## Selected Commodities\*

(000's tonnes)

Item	Pre-1949 peak †	1949	1952	1957	1958	1959
Coal .. .. .	61,900	31,000	66,600	128,000	270,000	335,000‡
Iron ore .. ..	11,000	590	4,290	15,000	30,000	45,000
Pig iron§ .. .	2,000	246	1,928	5,940	9,500	15,000
Crude steel§ ..	1,000	158	1,350	5,350	8,000	12,000‡
Rolled steel ..	700	140	1,100	4,260	6,000	8,000
Crude petroleum	320	120	440	1,440	2,260	3,500
Cement .. .. .	2,300	660	2,860	6,860	9,300	12,500
Salt .. .. .	5,100	2,000	4,950	8,280	10,400	13,000
Chemical phosphate	0	0	small	120	344	700
Manganese ore ..	80	1	191	700	850	1,000
Tungsten concentrate	15	5	20	15	15	15
Antimony .. ..	40	4	8	15	15	15
Tin .. .. .	15	4	10	24	25	26
Copper, refined ..	3	2	10	50	70	80
Lead, refined .. .	12	2	7	45	60	75
Zinc, refined .. .	7	0	9	37	41	60
Aluminium .. . .	9	0	0	20	27	60

\* Partly estimated by author.

† In most instances, the pre-1949 peak year was 1943. Major exceptions include antimony during 1916 and tin, tungsten, and manganese during the late 1930's.

‡ Represent target data. Preliminary claims for coal and crude steel output were respectively 347,800,000 and 13,350,000 tonnes.

§ Excludes 4,200,000 tons of off-grade pig iron and 3,100,000 tons of off-grade steel for 1958 and an estimated 5,500,000 tons of off-grade pig iron and several million tons of off-grade steel for 1959.

Coal is China's most valuable mineral asset and is the chief source of energy and metallurgical fuel. Overall coal resources are claimed to be 9.6 trillion (U.S.) tonnes with 100 billion (U.S.) tonnes "verified". Most of the coal in the country's 30 large coalfields is bituminous and seven of them have large tonnages of coking coal. Coal output was doubled between 1957 and 1958 and rose 25 per cent between 1958 and 1959. Claimed production in 1959 was 347,800,000 tonnes, seven fields each producing more than 10,000,000 tonnes of run-of-mine coal and another 20/25 fields producing between 1 and 10,000,000 tonnes each. Cleaning facilities capable of dealing with 100,000,000 tonnes per annum will soon have been installed. Advanced mining techniques are being employed.

Workable iron ore reserves in China appear to be at least five billion (U.S.) tonnes, more than ample to support a 50,000,000 ton steel industry.

## Other Minerals

In the ferro-alloy mineral field, a 1,000,000 ton per annum manganese ore industry is being developed which would meet internal needs and have some surplus for export. About 15/20,000 tonnes of 65 per cent  $WO_3$  tungsten concentrate is produced annually. Of this, domestic consumption is about 5,000 tonnes a year. Most of the molybdenum concentrates output is exported, but both tungsten and molybdenum metal are now being made. Chromium and nickel are imported, but there is no shortage of most minor ferro-alloy minerals such as titanium and vanadium.

Manganese reserves are extensive, probably about 50,000,000—100,000,000 tonnes, most of the high grade deposits being south of the Yangtze River extending from Fukien Province westward. Tungsten deposits, in terms of 65 per cent  $WO_3$  concentrate, are about 5,200,000 tonnes, the four big mines in Kiangsi Province all producing wolframite. Kwantung Province, also a producer of wolframite, ranks next to Kiangsi. Extensive reserves of scheelite exist, primarily in Hunan Province. Little is known about molybdenum reserves; most comes from Manchuria, but a discovery has been claimed in the Chinling Mountains, Shensi Province.

In the non-ferrous field, China is expected to become a medium producer of base metals, copper, lead, and zinc within five years. Reserves have been reported at three to six million tonnes each and primary output for all three metals is expected to surpass 100,000 tonnes per annum by 1962 and 150,000 tonnes by 1965. Most non-ferrous mines and smelters have a yearly capacity of 5/20,000 tonnes of these metals, but the industry is being rapidly built up from a formerly insignificant base.

Tin heads the list of non-ferrous "export" metals. Production in recent years has been about two-thirds more than the pre-Communist peak and reserves can support a 30,000 ton annual output indefinitely. A yearly surplus of about 20,000 tonnes of refined tin will exist for some years, part of which will continue to be absorbed by the Soviet bloc countries. The Ku-chiu (primarily lode tin) area in Yunnan is still the backbone of the Chinese tin industry and progress has been made in expanding facilities, streamlining operations and making better grade products. The Fu-ho-chung (primarily placer tin) area in Kwangsi has become very important in tin production, ranking next to Ku-chiu.

The Chinese antimony industry, still the largest in the world in terms of output and reserves, is not producing as much as in the past for lack of world markets. Hsi-k'uang-shan in Hunan is the foremost mine and efforts are being made to produce high-purity antimony. Mercury deposits are widespread and the outlook is promising. The chief centre of production is the T'ungjen area, Kweichow. Bismuth output, already large, can be expanded when required. It occurs with tungsten and non-ferrous metals and, though refined at several places, is chiefly exported as concentrates.

China's small integrated aluminium industry is rapidly expanding and annual output of primary aluminium should top 100,000 tonnes by 1962 and 150,000 tons by 1965. At present aluminium ingots are imported. Much of the extensive Chinese raw material base is not adaptable to the Bayer process and others are being tried with fair success.

Little is known of magnesium extraction in China but magnesite resources in Manchuria are extensive and of high purity. Gold resources are undetermined but believed to be widespread and extensive. Silver is generally found and extracted with lead-zinc ores. There appears to be a shortage of platinum, but deposits reportedly have been discovered in Tsinghai and Shensi. Equally, there is no great wealth of information on China's resources and production of radio-active and related minerals, though three general areas—Sinkiang, Kwangsi and Liaoning—have been mentioned. Small scale work in zirconium and hafnium is being done, the possibilities for vanadium appear good and some selenium, cadmium, germanium and rare earth metals have been produced.

Pyrite production is steadily rising and production from non-ferrous mines is to be supplemented from two large pyrite mines being developed. China has a surplus of sulphur for export. There are fairly extensive deposits of gypsum in Shansi Province. Fluorite, talc and graphite are all important export products, but domestic consumption of these has also risen tremendously. Among new non-metallic industries developed to sizeable proportions in recent years are asbestos and barytes production.

Important industrial diamond deposits have been discovered in Hunan, Kweichow and Shantung Provinces. Much block and scrap mica resources have also been uncovered and sufficient amounts produced for the electrical industry. Piezoelectric quartz is another new product which is receiving some attention as an export item to the Soviet Union.

## Research on Extraction of Metals

**R**ESearch on extraction of metals is carried out in the Radiochemical building, which was extended last year and has been fitted with extraction equipment for treating large quantities of ore.

### Extraction of Gold

Considerable improvements have been made in the ion-exchange process for the recovery of gold from cyanide solutions. In this process, first described in *Chemistry Research*, 1955, advantage was taken of the high selectivity and relatively high capacity shown by weak-base resins of the methylamine type for aurocyanide present in cyanide solution, together with other metal cyanides. A marked increase in gold capacity and selectivity has been obtained by using resins containing longer-chain alkyl amines. Thus, for example, with resins prepared from butylamine a capacity of three to four times that obtained with methylamine type resins is found. This improvement is probably due to increased steric hindrance, in that the proximity of the charged site makes the approach of all but linear ions difficult. Thus, interference due to nickelocyanide, a square planar ion, commonly present in gold liquors, was very considerably reduced. Unlike methylamine resins, these long-chain amine resins do not require the inclusion of strong-base groups to attain optimum capacity.

Consideration has been given to the possible recovery of nickelocyanide as a by-product in an aurocyanide recovery process. By the use of a suitable resin showing high selectivity and capacity for nickelocyanide it would be possible to remove nickelocyanide either before the gold recovery step, which would have the advantage of increasing the efficiency of the gold recovery process, or subsequently, which would avoid the risk of any possible loss of gold. For either alternative, a strong-base methylamine resin of a low degree of cross-linking has been shown to possess a high affinity and selectivity for nickel. This property is probably due to the higher flexibility of the polystyrene chains, which makes it possible for strong-base groups to achieve the proximity required for absorption of the divalent nickelocyanide ion.

### Uranium

Work on various aspects of the extraction of uranium has continued. These studies include solvent extraction from classified liquors and pulps, natural leaching of uranium ores and the application of ion-exchange techniques. New resins have been synthesized and special attention is being given to the avoidance of silica poisoning of resins.

Further results obtained in the study of the absorption of silica from acid sulphate solutions by anion-exchange resins are in agreement with the general theory that silica poisoning of such resins is due to the formation of silicic acid polymers in the resin structure. Experimental evidence is in agreement with the suggestion that silica absorption can best be explained on the basis of complex anion formation between silicic acids and the anions in the resin, and possibly also in the solution.

The degree of silica absorption is dependent on the degree of condensation of the polysilicic acids present in

The National Chemical Laboratory, reconstituted under its present name in October, 1958, is pursuing a vigorous policy of fundamental research, basic work and sponsored investigations, all aimed at problems of national importance. Work on the extraction of metals from minerals and ores is described in the report for 1959 (published for the D.S.I.R. by H.M.S.O., price 4s. 6d. net, by post 4s. 11d., U.S.A. 81 c.)

solution, and there is a critical range which gives maximum poisoning effect. The degree of condensation giving maximum absorption, the total amount of silica absorbed, and the extent of silica poisoning, all increase with water regain of the resin used.

One possible method of overcoming silica poisoning is to condense the silicic acid in the leach liquor to a sufficient degree, so that the molecules are prevented from entering the resin matrix. Of the methods so far examined, heating the leach liquor appears to be the best method of inducing condensation.

The use of aminated polyvinyl chloride as an ion-exchange material for the recovery of uranium from leach liquors and pulps has been investigated. The most promising use of animated PVC, states the report, is as a granular exchanger which could be used as a possible alternative to polystyrene based ion-exchange resins. It has been demonstrated that the absorption of silica from sulphuric acid solution at pH 1.8 by suitably prepared materials is considerably less than by conventional exchangers. Animated PVC may offer a solution to the problem of silica poisoning experienced in some uranium recovery plants employing ion-exchange processes.

Investigation of the factors controlling natural leaching of uranium from suitable ores has further reduced the time required for a given percentage extraction of uranium. With some ores 80 per cent extraction of uranium has been achieved in ten weeks and the effluents from beds of ore have contained up to 13 g  $U_3O_8/l$ .

Trinonylamine has been investigated as a possible extractant for the recovery of uranium from sulphate leach liquors by solvent extraction. This amine has recently become available from U.K. sources at a competitive price. Continuous counter-current solvent extraction of a typical uranium-bearing leach liquor, by means of a dilute solution of the amine in kerosene, has shown that this solvent is satisfactory with respect to selectivity, loading capacity and rapid complex formation, and that solubility and entrainment losses to the aqueous phase are low.

### Beryllium and Rare Earths

Continued work is reported on the isolation of rare earth oxides of 99.9 per cent purity, using the ion-exchange techniques described in earlier reports. Effort is now concentrated on building up stocks of the less accessible middle earths (Ho, Dy, Tb) and europium.

Work on a programme of research into the method of extracting and concentrating beryllium from low-grade ores and flotation concentrates has been continued.



Coke ovens under construction for Rhodesian Iron and Steel Corporation at Que Que. The consulting engineers are John Miles and Partners

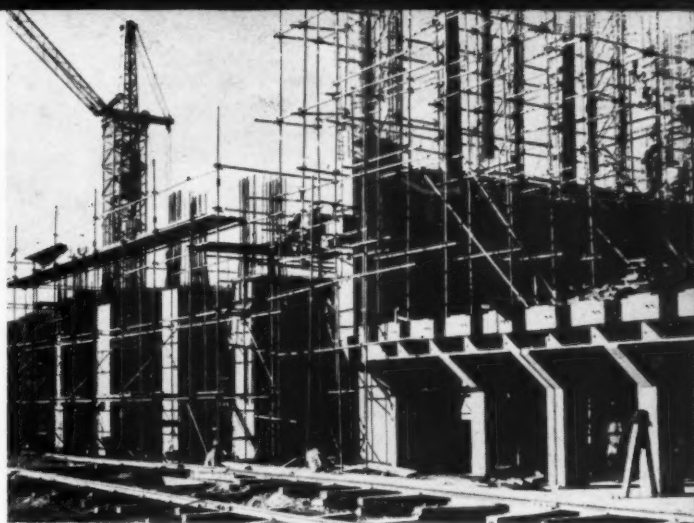
ARISING out of what is undoubtedly one of the fortunate geological coincidences of the world, whereby hematite and high-quality limestone have been found close together in Southern Rhodesia, iron and steel production, already well established at Redcliff, about 140 miles south west of Salisbury, is being greatly expanded there by The Rhodesian Iron and Steel Co. Ltd. Coal for iron and steel production is being delivered by rail from the almost unlimited supplies at Wankie, 350 miles away.

At the beginning of 1957, The Rhodesian Iron and Steel Co. took over from the Southern Rhodesian Government the assets of the Rhodesian Iron and Steel Commission. RISCO was formed by the Lancashire Steel Corporation, Stewarts and Lloyds, Anglo American Corporation, Rhodesian Selection Trust, British South Africa Co., Messina (Transvaal) Development Co. and Tanganyika Concessions. The assets of the Commission were valued at £4,300,000 (excluding the Redcliff European Township) for which the government took up shares and stock in the company.

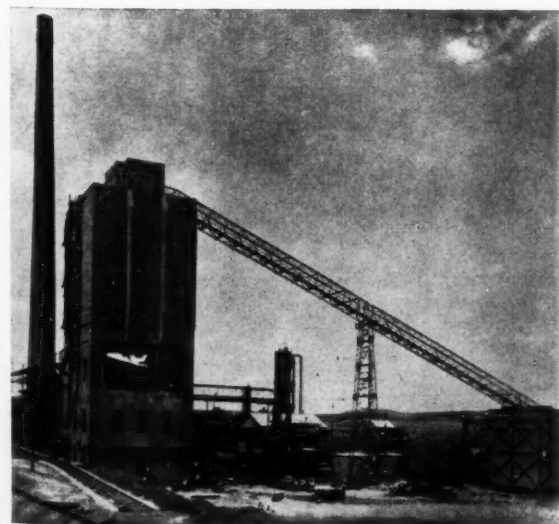
## Rhodesian Iron and Steel Developments

Included in the assets at Redcliff were two blast furnaces with a potential output of 240 tons of iron a day, two open hearth furnaces producing 225 tons of steel, a 21 in. and a 10 in. rolling mill. At Bulawayo, there was an electric furnace and a small steel rolling and forging plant.

In 1956, 63,000 s.tons of ingot steel had been produced in the Federation and after a comprehensive survey following its taking over the assets of the Rhodesian Iron and Steel Commission, RISCO embarked on a programme of



reconstruction and expansion designed to increase output to 150,000 ingot tons, at a capital cost of £8,000,000. The plans provide for a new blast furnace with a capacity of 500 tons a day, another open hearth furnace, a blooming mill, a battery of 25 coke ovens and other installations and equipment. A sheet mill to produce plate up to  $\frac{1}{4}$  in. thick and 28 to 10 gauge sheet of various types has also been added to the expansion programme.



The programme has been planned in units which can be further extended with the minimum alteration and loss of production and the present extensions are scheduled to be brought into service from the middle of 1960.

The Coppee Co. (Great Britain) Ltd., in association with John Laing and Son (Rhodesia) Ltd., were awarded the contract for the coal preparation, coking and by-product plants, Laing's Rhodesian company having also been responsible for the recently completed civil engineering work.

Construction work has included various reinforced concrete structures, of which the most outstanding was a 2,000-ton service bunker which rises to a height of 136 ft. above ground level, immediately adjacent to which is the battery of 25 coke ovens on a reinforced concrete raft and with buttressed walls.

Further structures completed for the coking plant were the tippler pit, with coal hoppers and conveyor tunnel, raw coal screening house, washery and filter building, a thickener tank, crushing plant, quenching tower with breeze basins and a coke wharf.

The hematite is being mined by opencast terrace methods while the limestone is being won by blasting and quarrying.

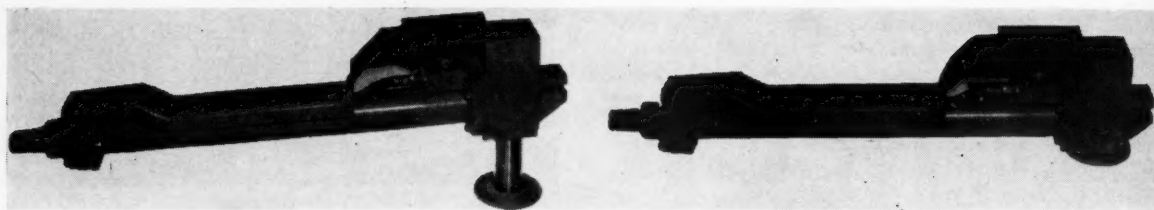
The 1959 output of iron ore in Southern Rhodesia was 143,000 s.tons (159,500 s.tons in 1958, 148,800 s.tons in 1957), while limestone production in 1959 was 995,900 s.tons (1,057,200 s.tons in 1958, 834,700 s.tons in 1957).

When the new plant comes into operation in 1960/61, the present output will be trebled and the Federation's foreseeable needs for iron and steel will largely be met.

The Rhodesian Iron and Steel Corporation steelworks at Que Que. Both photographs are by John Laing and Son Ltd.

## Machinery and Equipment

### The Bretby Conveyor Lifter



The Central Engineering Establishment of the National Coal Board, in collaboration with the staff of Bestwood Colliery, Area No. 6, East Midlands Division, has designed and manufactured a conveyor lifter for quick and easy elevation of armoured face conveyors for horizon fixing and for inspection of the chain on the return side of the pans.

To advance an armoured face conveyor horizontally, double-acting rams are used, powered by a water emulsion pump located in the gate road. On the other hand the vertical movement required to fix the horizon is usually achieved by means of a commercial type lifting jack. This method has several disadvantages. Firstly, the operation of the jack is the full-time occupation of one man on each face. Secondly, in the event of a breakdown, with only one jack on the face it often takes a full shift to locate the point where the chain is broken or staked. Thirdly, the use of such a jack has serious drawbacks in low seams, where the operating lever has to be very short.

The Bretby conveyor lifter consists of a jack which is designed for incorporation with a ram, so that the combined piece of equipment can be used for all the required operations. Illustrations

show the jack combined with a Bonser Ram, but any other type of ram could be used as the basis of the conversion.

The jack itself has a malleable iron housing, on the front of which is integrally cast the slotted lug for attaching the jack to the standard spillplate, the ends of the housing being closed by spigoted steel caps.

Working inside the honed bore of the housing is a one-piece piston and rod; a circular footplate is attached to the bottom of the piston rod by two cap screws. The piston head is sealed by a rubber "O" ring and the piston rod end is similarly sealed by a rubber "O" ring mounted in the bottom cap. This lower seal and piston rod are protected by a rubber "wiping" seal which cleans the rod when the jack is being retracted. Drilled holes in the housing direct fluid to the upper or lower side of the piston.

To convert a standard Bonser Ram so that it will accept the jack, it is necessary to remove the two lifting lugs and machine a smooth vertical face on the ram head. Four cap screws are then used to hold the two units together. The standard valve housing is replaced by a new unit, mounted on the same two screws but incorporating extra drillings to perform the additional functions.

Above, at left, the Bretby lifter with jack retracted, and at right with jack elevated. Below, at left, the Dynoscreen by International Combustion Ltd., shown in: A revolving perforated cone, B helical screw conveyor, C gear unit, D mild steel base, E stainless steel or mild steel hood, F sight glass, G effluent outlet, H wash water inlet, J wash liquor outlet, K screen mesh

Particulars of the unit are: type—double-acting jack; fluid—oil and water emulsion; stroke—6in.; bore—3in. dia.; lift (at 1,000 lb./sq. in.)—2.19 tons; overall height (retracted)—10½ in.

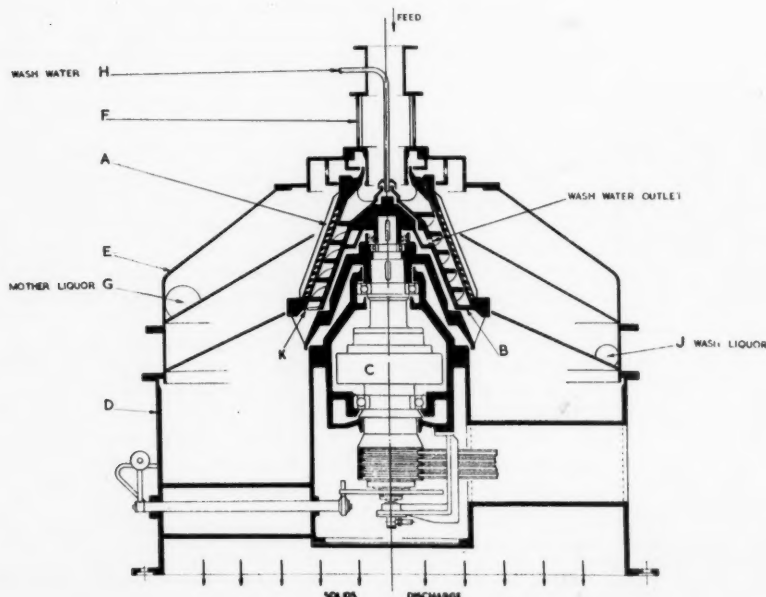
The usefulness of the installation has been proved by experience underground at Bestwood Colliery, where one face is fully equipped with 30 rams. On this face the combined units are set at seven-yard intervals and the simultaneous operation of three adjacent jacks lifts the conveyor complete, with little catenary effect on the conveyor between the jacks. This facilitates inspection of the bottom chain, and 80 yards of chain have in fact been replaced in only 1½ hours on this face.

### A CONTINUOUS SCREEN-TYPE CENTRIFUGE

The recently-introduced Dynoscreen continuous screen type centrifuge manufactured by International Combustion Products Ltd., is a compact unit of established design for the separation of solids from magmas and slurries. The machine has many applications in the mining industry, where its design meets modern screening requirements effectively and economically.

The Dynoscreen can function either as a centrifuge or centrifugal screen, handling a wide variety of materials. Fibrous and granular solids as well as powdery materials possessing free draining characteristics are easily separated, and it is not essential for the specific gravity of the solids to be greater than that of the liquor in which they are suspended. When used to separate crystals from magma, the Dynoscreen will deliver a product of uniform dryness into a dryer at a continuous rate. Another application is the removal of the liquor occluded by plastics during polymerization.

Materials handled by the Dynoscreen include alumina, coal, potassium sulphate, potassium chlorate, rock salt, sodium sulphate.



## NEW BAUXITE TRANSPORTER

A new form of transporter for use on bauxite-mining sites is announced from Hungary. The serious problems hitherto set by the moving of the watery, gluey substance have been countered by a caterpillar-track vehicle fitted with high-speed blades. These blades, made of a wear-resistant material, pick up the broken ore after blasting and throw it off on to a rear conveyor belt by centrifugal force. This band transports the ore to carriers situated on an industrial rail track.

In operation, the electric - motor powered unit can load 20 tons of bauxite into the carriers in about 40 minutes. The unit can be used not only for bauxite but also lignite, clay, gravel, coal, sand, etc. Mass production of it is soon to begin in Hungary.

## FLEXIBLE RUBBER HOSE

BTR Industries Ltd. announces the availability of a new flexible rubber hose—the HI-FLEX 1104—with a range of push-in end fittings. The hose is of neoprene and of flax-braid construction, and offers maximum resistance to swelling and ageing. The construction is such that the push-in fittings will hold without the use of conventional clamps or clips.

Indeed, the combination of HI-FLEX 1104 and these specially-designed inserts—fitted without tools in five seconds—is a revolutionary development which allows replacement time to be cut to a minimum.

The one braid hose, suitable for use with push-in fittings, is available in bore sizes up to one inch and will give a working pressure of 300 p.s.i. Crimped end fittings are recommended for use with two braid hose allowing working pressures up to 800 p.s.i. These are factory fitted and can be supplied to suit customers' individual requirements.

The push-in fittings are supplied complete with plastic end caps to protect the hose ends and give the unit an extremely neat finish.

## OPERATING PRINCIPLES OF A RANGE OF VIBRATING FEEDERS

The principle of Locker vibrating feeders is a vibratory power unit attached to the feeder deck at a slight angle, so that it imparts forward and upward impulses. The effect is to move the material in a continuous series of rapid, short, forward hops. These are imperceptible to the eye, the material appearing to move in a uniformly flowing stream.

The pulsating motion keeps the material in suspension so that there is no sliding action on the deck surface. Abrasive wear is therefore negligible. Small feeds can be supplied with vibrating hoppers for use with materials tending to bridge over small openings, or hang up in stationary hoppers.

These feeders can control any quantity from a few lbs. to 2,000 t.p.h. They have definite application in mining, and the range is described in a pamphlet recently issued by the manufacturers, Lockers (Engineers) Ltd.

## Direct Iron Processes

In recent years, particularly in North America, there has been considerable effort by industry and, to a lesser extent, government, in developing direct iron processes. The product from these processes could be used as a substitute for pig iron and scrap, and in some cases might be preferable. By establishing a direct iron plant in eastern Canada, the Canadian economy would benefit in two general ways. First, a direct iron plant would provide additional employment, process more Canadian raw materials within the country, and help to broaden the Canadian tax base. Second, by exporting direct iron products rather than iron ore, the increase in value might be threefold. This would help to obtain a more favourable balance of payments.

Several direct iron processes (i.e. non-blast furnace processes that reduce iron ore to pig iron or to sponge iron which is only partly reduced) appear to be technically feasible and, to some interests, economic. The question as to whether they are economic or not has given rise to considerable controversy throughout the iron and steel industry. In a report published by the Department of Mines and Technical Surveys, Ottawa (*Mineral Information Bulletin M.R. 40*), Mineral Resources Division, R. P. Elver has endeavoured to evaluate the magnitude of the potential direct iron market in eastern Canada, north-eastern United States and western Europe, and to evaluate the economics of a few typical processes for hypothetical plant sites in four main areas in eastern Canada: Quebec North Shore, Montreal, Hamilton and Port Arthur.

The results of this timely study suggest that the local market for sponge iron and direct iron, if supplemented by a modest share in the market areas of

the north-eastern United States or western Europe, might be large enough to justify an eastern Canada direct iron plant of at least nominal size (i.e. 100,000 tons per year). The total cost of producing direct iron products approaches the price which potential consumers might be willing to pay. Several Canadian companies are known to be interested in establishing direct iron facilities when the time is appropriate.

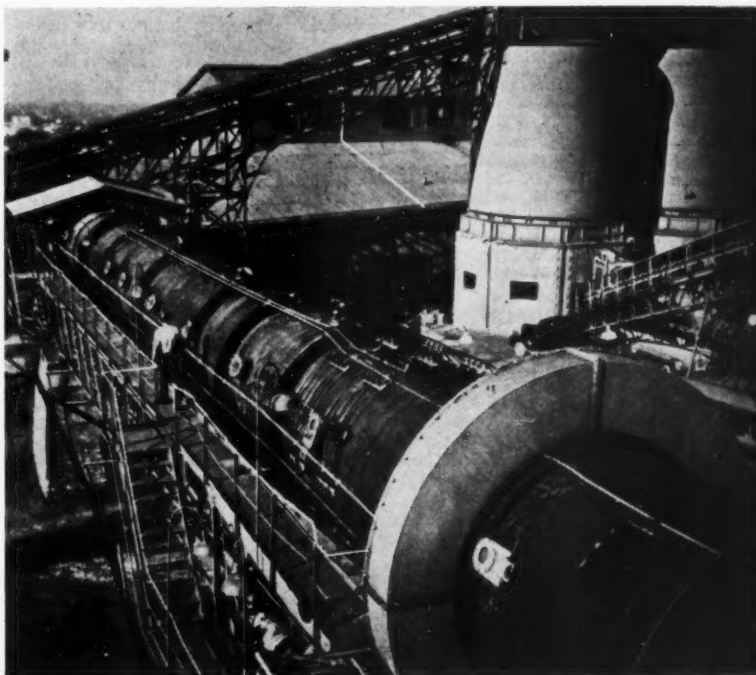
It is emphasized, however, that the cost estimates in the report are subject to revision depending mainly on figures used for initial capital costs, interest rates and the cost of iron ore. Any company planning a direct iron project at this time would be assuming considerable risk because of cost uncertainties and, to date, lack of definite markets.

Recently Head Wrightson & Co. Ltd. announced that under an arrangement with the R-N Corporation of New York they are now able to engineer and supply throughout the world complete plants using the R-N process for the direct reduction of iron ore and the production of briquettes of a very high iron content.

The R-N process, so called from the initials of the two companies which have combined to develop it—Republic Steel Corporation and National Lead Co.—is able to deal effectively with a wide variety of iron ores. It is essentially a very simple process and is not dependent upon the availability of a supply of coking coal. The process will have extensive application especially in those countries where iron ore is found but such coking coal is not available.

Under such conditions the capital and running costs of R-N plants are competitive with other direct reduction processes.

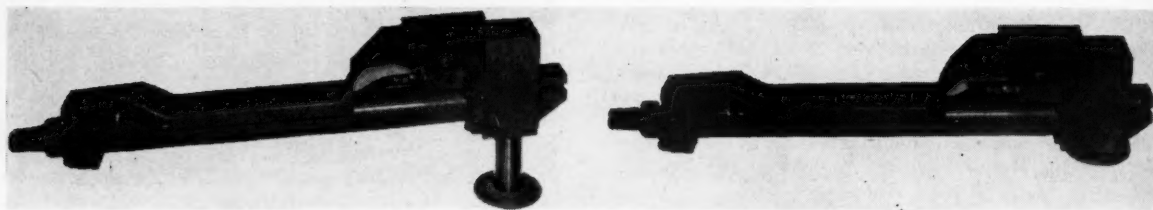
View of the rotary kiln at the R-N pilot plant in Alabama, United States





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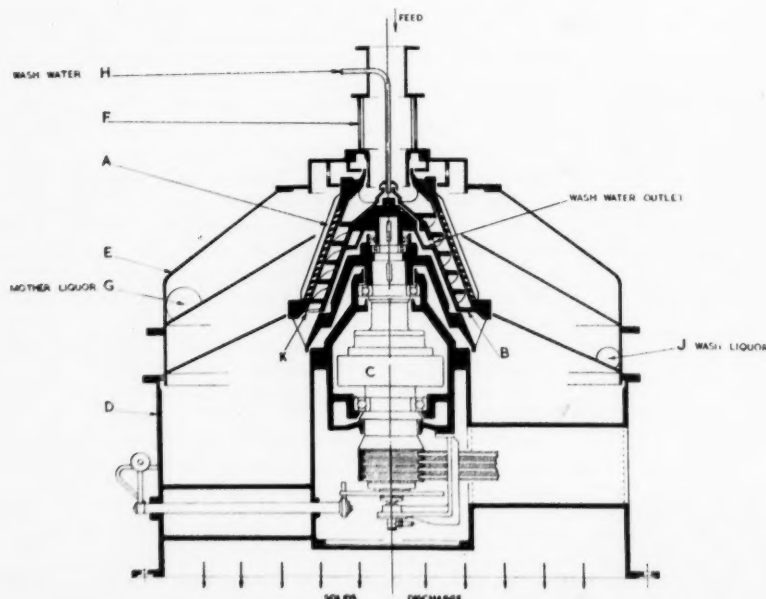
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BTR Industries Ltd. announces the availability of a new flexible rubber hose—the HI-FLEX 1104—with a range of push-in end fittings. The hose is of neoprene and of flax-braid construction, and offers maximum resistance to swelling and ageing. The construction is such that the push-in fittings will hold without the use of conventional clamps or clips.

Indeed, the combination of HI-FLEX 1104 and these specially-designed inserts—fitted without tools in five seconds—is a revolutionary development which allows replacement time to be cut to a minimum.

The one braid hose, suitable for use with push-in fittings, is available in bore sizes up to one inch and will give a working pressure of 300 p.s.i. Crimped end fittings are recommended for use with two braid hose allowing working pressures up to 800 p.s.i. These are factory fitted and can be supplied to suit customers' individual requirements.

The push-in fittings are supplied complete with plastic end caps to protect the hose ends and give the unit an extremely neat finish.

## OPERATING PRINCIPLES OF A RANGE OF VIBRATING FEEDERS

The principle of Locker vibrating feeders is a vibratory power unit attached to the feeder deck at a slight angle, so that it imparts forward and upward impulses. The effect is to move the material in a continuous series of rapid, short, forward hops. These are imperceptible to the eye, the material appearing to move in a uniformly flowing stream.

The pulsating motion keeps the material in suspension so that there is no sliding action on the deck surface. Abrasive wear is therefore negligible. Small feeds can be supplied with vibrating hoppers for use with materials tending to bridge over small openings, or hang up in stationary hoppers.

These feeders can control any quantity from a few lbs. to 2,000 t.p.h. They have definite application in mining, and the range is described in a pamphlet recently issued by the manufacturers, Lockers (Engineers) Ltd.

## Direct Iron Processes

In recent years, particularly in North America, there has been considerable effort by industry and, to a lesser extent, government, in developing direct iron processes. The product from these processes could be used as a substitute for pig iron and scrap, and in some cases might be preferable. By establishing a direct iron plant in eastern Canada, the Canadian economy would benefit in two general ways. First, a direct iron plant would provide additional employment, process more Canadian raw materials within the country, and help to broaden the Canadian tax base. Second, by exporting direct iron products rather than iron ore, the increase in value might be threefold. This would help to obtain a more favourable balance of payments.

Several direct iron processes (i.e. non-blast furnace processes that reduce iron ore to pig iron or to sponge iron which is only partly reduced) appear to be technically feasible and, to some interests, economic. The question as to whether they are economic or not has given rise to considerable controversy throughout the iron and steel industry. In a report published by the Department of Mines and Technical Surveys, Ottawa (*Mineral Information Bulletin M.R. 40*), Mineral Resources Division, R. P. Elver has endeavoured to evaluate the magnitude of the potential direct iron market in eastern Canada, north-eastern United States and western Europe, and to evaluate the economics of a few typical processes for hypothetical plant sites in four main areas in eastern Canada: Quebec North Shore, Montreal, Hamilton and Port Arthur.

The results of this timely study suggest that the local market for sponge iron and direct iron, if supplemented by a modest share in the market areas of

the north-eastern United States or western Europe, might be large enough to justify an eastern Canada direct iron plant of at least nominal size (i.e. 100,000 tons per year). The total cost of producing direct iron products approaches the price which potential consumers might be willing to pay. Several Canadian companies are known to be interested in establishing direct iron facilities when the time is appropriate.

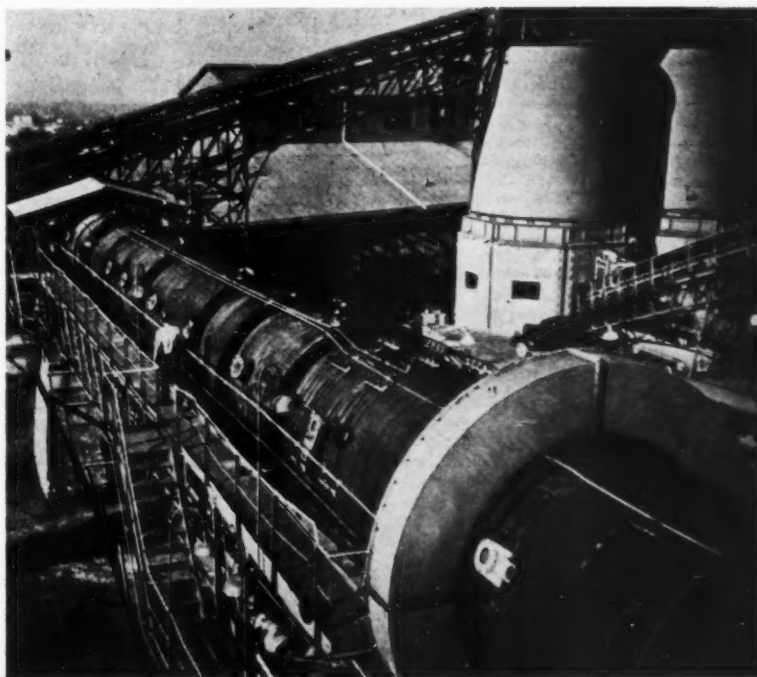
It is emphasized, however, that the cost estimates in the report are subject to revision depending mainly on figures used for initial capital costs, interest rates and the cost of iron ore. Any company planning a direct iron project at this time would be assuming considerable risk because of cost uncertainties and, to date, lack of definite markets.

Recently Head Wrightson & Co. Ltd. announced that under an arrangement with the R-N Corporation of New York they are now able to engineer and supply throughout the world complete plants using the R-N process for the direct reduction of iron ore and the production of briquettes of a very high iron content.

The R-N process, so called from the initials of the two companies which have combined to develop it—Republic Steel Corporation and National Lead Co.—is able to deal effectively with a wide variety of iron ores. It is essentially a very simple process and is not dependent upon the availability of a supply of coking coal. The process will have extensive application especially in those countries where iron ore is found but such coking coal is not available.

Under such conditions the capital and running costs of R-N plants are competitive with other direct reduction processes.

View of the rotary kiln at the R-N pilot plant in Alabama, United States





## N. American Aluminium Exports Soar

As the world's largest exporter of aluminium, Canadian foreign shipments are always a useful guide to the strength of the market and the increasingly bullish outlook for this metal, which has been made apparent in this column over recent months, is again emphasized by the latest Canadian figures. For the first five months of this year Canadian exports totalled 221,250 s.tons, a 45 per cent increase on the comparable period of 1959. The pattern of exports appears however to be changing substantially. Shipments to the U.S. (41,165 s.tons) for the first five months are 12 per cent down on 1959 while shipments to Britain (73,100 s.tons) show an increase of 34 per cent. Shipments have also been considerably heavier to Germany, Italy and France which in the aggregate accounted to some 35,500 s.tons, nearly 50 per cent up on the corresponding months of 1959. Japan took 11,800 tons against virtually nil and Australia 9,700 s.tons against 6,300.

This improvement has occurred simultaneously with a marked expansion in U.S. exports which for the first five months of this year totalled 137,000 s.tons, 12 per cent more than the total for the whole of last year.

These figures underline the fact that although *per capita* consumption in North America is still rising (it will be 28 or 29 lb. this year) the big potential markets are seen by all producers to lie elsewhere. *Per capita* consumption in Western Europe at present averages a little under 7 lb. but American producers are reputed to be banking on a yearly growth of about 6 per cent in the short term and believe that European consumption may double by the end of this decade.

### U.S. NICKEL CONSUMPTION RISING

Despite the second quarter fall-off in U.S. steel production, latest predictions from the Department of Commerce are that production in 1960 may reach 112,000,000 ingot tons, which although 10 per cent below January expectations, is still the best since 1957. This is encouraging news for producers of steel alloy metals. Significant in this context is the Commerce Department's mid-year re-assessment of probable U.S. nickel consumption, which is unchanged from the January forecast at 255,000,000 lb. compared with 227,500,000 lb. in 1959. Consumption during the first quarter of 1960 is reported at 69,700,000 lb. (10,000,000 lb. up on the corresponding period of 1959), and for the second quarter is estimated at 55,000,000 lb.

It is as yet by no means clear to what extent shipments from Cuba are being interrupted. Discussions between the G.S.A. and a Cuban delegation regarding the future of the Nicaro plant (*The Mining Journal*, July 8), are expected to be resumed next month, and meanwhile it has been reported in the *American Metal Market* that some nickel is still being processed in the

plant and shipped to the U.S. under special permit.

In any event, Cuba is unlikely to prove an important U.S. market factor. Total Cuban production in 1959 was only about 40,000,000 lb., while at the same time out of 19,000,000 lb. of cathode ni-kel offered to U.S. industry from D.P.A. stock in January, at the market price, only about 5,000,000 lb. have been taken up, which confirms that Canadian producers are having no difficulty in meeting requirements, even though Inco's Thompson project is not yet in production.

### MAGNESIUM IN THE U.S.

Despite slow recovery from the recession and a rather disappointing market performance in the first half of this year, magnesium consumption in the U.S. is reported to be trending upward in non-military and commercial applications, and the outlook is regarded as good. While there has so far been no appreciable improvement in 1960, the industry has at least continued to

hold its own, shipments in the first six months being estimated at 23,500 tons, which is roughly equivalent to the annual rate in 1959. This indicates current consumption as being at a little more than 50 per cent of the industry's installed capacity, which is slightly more than 90,000 tons.

Promising developments are reported in magnesium alloys, particularly those featuring the rare earth metals, for use in missile construction. Magnesium also appears to be making some headway in ground vehicles, states the *American Metal Market*. Quietly and without fanfare, it will be given a chance this year to prove its worth in the automotive industry in direct competition with other casting materials. One major car manufacturer has stated that, tests of magnesium casting for a specific component having proved satisfactory, the company will equip a portion of the outputs of one of its 1961 cars—tentatively 25 per cent—with these magnesium castings in order to evaluate performance against the type of casting now being used. This development undoubtedly reflects the effect of a magnesium producer's efforts to establish AZ91B magnesium as a standard automotive casting material. Last year Dow Metal Products instituted a programme by which it offered castings customers a pricing formula which, in effect would match aluminium pricing. Added incentives were a price protection guarantee and a development allowance.

## COPPER • TIN • LEAD • ZINC

(From Our London Metal Exchange Correspondent)

Business has been noticeably quieter this week as the holiday period gets into full swing. Prices generally have been inclined easier as, with a number of works closed, consumer interest has been very limited but the undertone remains satisfactory and provided the overall picture of trade does not undergo any marked change in the coming weeks, a revival of interest is to be expected during the early part of the last quarter of the year.

### SUBSTANTIAL SPOT COPPER SALES ON L.M.E.

The main feature of the London copper market has been a reduction in the backwardation at the end of last week following influential selling of cash metal. Whilst initially these offerings were well absorbed, the tonnage involved was of sufficient proportions to unsettle the market, and in anticipation of a further rise in U.K. official warehouse stocks, which, in fact, increased last week by 789 tons to 5,274 tons, buyers were reluctant to commit themselves.

However, at the lower levels established for both the cash and forward positions, the market has a basically very steady appearance considering the position in Central Africa. This concerns not only the Congo but also the Federation where there have been disturbances, so far confined to Southern Rhodesia, but there is naturally some

nervousness as to the repercussions these could have on the Copperbelt. The Belgian price was reduced to B.frs. 34½ per kilo from B.frs. 35½ per kilo but this was only necessitated for currency considerations.

Fears that Europe might have difficulty in obtaining American copper, in the event of a squeeze developing on the L.M.E. or the Continent through an interruption of African supplies, have now been officially allayed by a statement from the U.S. Department of Commerce confirming the relaxation of its previous insistence on requiring the name of the end-user before granting an export licence. This relaxation appears to relate not only to the L.M.E. but to all *bona fide* traders in Western Europe.

There have been no further developments in Chile and so far the direct talks between Anaconda and representatives of the Chuquicamata workers on a new labour contract have made no real progress.

The American market continues quiet and customs smelters report domestic interest lacking but the producers expect their August output will be sold out. The customs smelters have increased their scrap buying price by ½ c. to 25½ c. basis No. 2 wire. So far there has been no evidence to support earlier predictions that August will see an improvement in orders for the brass and wire mills. In this respect the fabricators' statistics are surprising in that they dis-

close a rise of some 12 per cent or 13,217 tons to 127,143 tons in new orders booked during June. Domestic consumption in the month at 112,223 tons also showed an increase compared with 107,838 tons in May, whilst fabricators' stocks at the end of June declined to 451,982 tons from 457,644 tons at the end of the previous month.

### TIN EASIER

After the sharp rise in tin last week, some reaction, accompanied by profit-taking, was to be expected but the Eastern price, which on Thursday was equivalent to £829½ per ton c.i.f. Europe, has been well maintained. In this respect it has been confirmed in Singapore that although the contract basis of delivery is still "60 days", in practice delivery dates had tended to lengthen as some smelting capacity had been turned over to the treatment of Indonesian concentrates. Recent figures show 2,676 tons were imported in June from that country against nil previously.

With less demand for nearby metal in London, offerings of cash tin have again proved adequate to maintain cash and forward quotations almost level although about £5 down on the week. Whilst U.S. demand has remained routine, European consumers have been reluctant to follow the rise. U.S. consumption in May increased 4 per cent and during the month stocks decreased from 36,750 tons to 36,025 tons. U.K. official warehouse stocks fell slightly last week by 27 tons to 9,341 tons.

### LEAD AND ZINC

There have been no fresh developments to disturb the overall picture as far as lead and zinc are concerned and with consumer interest at a low level owing to holidays, prices have been inclined to drift. The contango on lead has contracted on account of technical considerations. During the week it was announced that a local dispute had halted production at two of the Consolidated Zinc Corporation's properties in Australia and further news is awaited. In the U.S., lead demand has shown a slight improvement but that for zinc continues no better than routine.

Closing prices are as follows:

	July 21 Buyers Sellers		July 28 Buyers Sellers	
<b>COPPER</b>				
Cash .. ..	£256½	£257	£252½	£253
Three months ..	£248½	£249	£247	£247½
Settlement ..	£257		£253	
Week's turnover	9,375 tons		7,825 tons	
<b>LEAD</b>				
Current ½ month	£71½	£71½	£71½	£71½
Three months ..	£72½	£72½	£71½	£71½
Week's turnover	3,800 tons		5,550 tons	
<b>TIN</b>				
Cash .. ..	£823	£823½	£815½	£816
Three months ..	£823	£823½	£816½	£817
Settlement ..	£823½		£816	
Week's turnover	1,430 tons		1,345 tons	
<b>ZINC</b>				
Current ½ month	£91½	£91½	£89½	£89½
Three months ..	£90½	£90½	£89½	£89½
Week's turnover	6,325 tons		4,525 tons	

London Metal and Ore Prices appear on page 132.

## Mining Finance

### "Johnnies" Spring a Surprise

A rise of 6d. to 5s. per £1 share in the Johannesburg Consolidated Investment dividend for the year to June 30 by the declaration of a final of 3s. 6d. was an extremely pleasant piece of news for the struggling market in South African mining shares, as there had been some doubts whether this finance company, of which Mr. Harry Joel is the chairman, would even be able to maintain its distribution. These doubts arose not from the profits angle—it had been taken for granted that these would be up—but from a fear, fostered, in fact, by the deputy chairman, Mr. D. A. B. Watson, last December, that substantial depreciation in the value of investments arising from the market depression over the last six months might weigh on distribution policy.

Almost equally as pleasant a surprise as the higher dividend was consequently the revelation in the preliminary statement that depreciation on a £29,000,000 portfolio seemed to have been confined to a mere £600,000 or so. It is felt that there must be some explanation of this other than any skilful, indeed almost impossible, warding off of the market effects of Africa's widespread racial troubles. Possibly it may lie in the fact that the £29,000,000 value of investments includes unquoted investments which are based on "directors' valuation". The full report in October should throw further light on this matter.

"Johnnies" tax burden has been sharply reduced on the present occasion thanks in part to relief of about £350,000 in respect of investment depreciation. So a £527,244 increase to £2,568,160 in gross profits is turned into a £1,109,387 rise to £2,099,653 in the net surplus of which the higher dividend actually only absorbs the modest

sum of £898,333. Of the balance, £600,000 is put to general reserve against nothing a year ago and £603,903 (against £247,630) to investment reserve to cover the year's net depreciation in investments. The carry-forward is virtually maintained at £240,639.

It is some measure of the continued uncertainties that bedevil the Kaffir market that "Johnnies" found it difficult to maintain the 3s. 6d. price jump that greeted the results. At 50s. cum the final dividend the yield is as much as 10.4 per cent. Africa's copper, diamond and platinum mines, its substantial interests in which were of chief importance in raising "Johnnies" 1959-60 revenue, are continuing to do well and the company's profit prospects for the current year are at the moment quite rosy.

### LOOKING AHEAD IN SAAIPLAAS

Free State Saaipplaas has now given full particulars of its plans to raise another £3 million by the issue of 6 million 10s. shares at par, first discussed here on July 15. It makes it quite clear that the new money is completely additional to past borrowings, cash resources having been exhausted this July. So the company after the present operation will have an issued Ordinary capital of £12,715,792 plus £1,200,000 of 6½ per cent convertible Notes and loans of £3,500,000, a somewhat formidable tally in all.

Shareholders may take some heart from the fact that the directors feel able to voice the following hopes. On the basis of the proposed new programme aimed at milling 100,000 tons a month by March, 1962, it is

(Continued on page 132)

## LONDON MARKET HIGHLIGHTS

The latest swing in the tide of African unrest to Bulawayo and Salisbury completely overshadowed mining share markets. Business remained at a minimum and the best that could be said was that there was still very little selling.

Gold shares, however, opened firmly enough on Monday as a result of a rather cautious demand from Johannesburg for selected issues. Western Holdings and F.S. Geduld, for instance, climbed back 3s. 1½d. to the common price of 118s. 9d. Sentiment was also given a much needed lift by the unexpected increase in the "Johnnies" dividend and the even more surprising news that the group's investment portfolio had suffered remarkably little deterioration in the year to June 30. All this raised "Johnnies" by 3s. 7½d. to 50s. 7½d. in the share market.

But on Tuesday Kaffirs succumbed to the general bearish political influences and did no more than steady a little on the following day, and F.S. Geduld and Western Holdings eased to 116s. 10½d. F.S. Saaipplaas, not helped by full details of the new finance plans, were also easier at 9s. 9d.

Firmness of the metal price brought little consolation to holders of Copper shares. Prices lost a little ground each day bringing Nchanga down to 51s. 10½d., Rhokana to 46s. 10½d. and Chartered to 73s. The June quarterly report of Chartered, which was

released on Wednesday evening, showed little change in royalty income from that of the previous three months. Gross revenue for the June quarter (excluding investment income which is not announced quarterly) amounted to £3,025,000 compared with £3,076,000 for the March quarter. The latest figure brings the gross total of royalty revenue for the nine months of the company's year to date to £8,771,000 compared with £6,718,000 in the same period of 1958-59.

The previous week's return to favour of the Tin group proved to be short lived. Share prices were marked down on each day despite a continued good demand for the metal. Buying of shares from Singapore appears to have dried up, and certainly actual selling was of itself too slight to account for share losses which over the three days lowered Ayer Hitam 5s. to 117s. 6d., Tronoh 4s. to 38s. 6d., Sungei Besi 2s. to 26s. 9d. and Tanjong 1s. 6d. to 25s. 9d.

Tin shares are one of the few market sections which still hold good investment promise. Demand for the metal continues at a high level and there is no slackening in the advance of earnings and dividends of the good-class producing companies. Share prices have already had a sharp rise but if the latest downtrend continues for much longer there should soon be some useful opportunities for a re-entry into this market.

## GOPENG CONSOLIDATED

### MAJOR W. E. HOSKING'S STATEMENT

The forty-seventh annual general meeting of Gopeng Consolidated, Ltd., was held on July 28 in London.

**Major W. E. Hosking, M.I.M.M.,** Chairman, presided.

The following is his circulated Statement:—

It is with the greatest regret that I have to refer to the death on August 29, 1959, of Mr. T. R. A. Windeatt, who had been a Director of this Company for 23 years, and who formerly had been a Partner in the firm of Messrs. Osborne & Chappel, Consulting Engineers, Ipoh, General Managers of the Gopeng property. Mr. Windeatt's intimate knowledge of conditions in Malaya was of the greatest assistance to his colleagues.

Recently another long association has been broken by the retirement of Mr. Stanley Wickett, after 24 years as a Director of your Company, which included 10 years as Chairman of the Board.

Mr. Wickett's wide and understanding knowledge of the Company's affairs has been of great assistance to his colleagues, who wish to take this opportunity of placing on record their appreciation of his long service and to extend to him their good wishes for a happy retirement.

We were fortunate in obtaining the services as Directors of the Company of Sir Ewen M. F. Fergusson and Mr. H. D. Kiddle, both of whom have had a long and intimate association with the Tin Mining Industry in Malaya.

The death of Mr. Kiddle on June 1, 1960, so soon after his appointment, was a great blow to his colleagues, who will sadly miss the benefits of his experience and advice.

The Accounts for the financial year ended September 30, 1959, show a profit of £40,219, after payment to the Malayan Government of £40,526 for Royalty on Ore Sales, the provision of £37,513 for United Kingdom and Malayan Taxation and Expenses in connection with the acquisition of French Tekkah and The Kinta Tin Mines Ltd. of £4,220.

Dividends—totalling 10½d. per 3s. 6d. unit of Stock—paid in respect of the year under review absorbed a net amount of £45,729. The balance unappropriated at September 30, 1959, was £46,997.

Stockholders will note that, in the Balance Sheet, an amount has been set aside against Buffer Stock Contributions by transferring from General Reserve £51,958 representing contributions to September 30, 1958, and by a charge in the Profit and Loss Account of £17,717 being the contributions during the year 1958/59.

As explained in the Chairman's Statement on the 1956/57 Accounts the Buffer Stock represents an asset frozen until the liquidation thereof and for this reason an amount equivalent to the contributions paid has been set aside in the Balance Sheet. This treatment will obviate certain taxation difficulties

which would otherwise arise under the special legislation relating to Overseas Trade Corporations.

I should mention that our Auditors have been negotiating on these points with the Inland Revenue for a considerable time and at the date when the Accounts for the year to September 30, 1959, were ready for publication the negotiations were not completed. It was therefore necessary to await the final outcome as the Accounts would be affected thereby. This is the cause of the delay in the holding of the Annual General Meeting, but I am pleased to report that the results of the negotiations have been to establish a basis which is of considerable advantage to the Company and therefore to the Stockholders.

The Company is being treated for taxation purposes as an Overseas Trade Corporation, but the benefits derived therefrom are largely offset by the continuance of Malayan Company Tax at 40 per cent.

The attention of Stockholders is drawn to the Report of the General Managers, Messrs. Osborne & Chappel—issued together with the Accounts. It will be noted that owing to the incidence of the Malayan Tin Control Regulations, the volume of ground treated was restricted to 852,200 cubic yards (as compared with 1,625,400 cubic yards in the previous year). As a consequence costs per cubic yard increased from 22.23 pence to 35.13 pence, and the amount of tin-ore recovered was reduced from 571 tons in the previous year to 391 tons in the year under review. The recovery per cubic yard was slightly higher at 1.03 lb. as compared with 0.79 lb. per cubic yard. Tributaries' ore sales totalled 312 tons and yielded a net revenue to the Company of £14,850. The price received per ton of tin-ore sold was £475 as compared with £429 during the previous year. A net profit of £24,171 accrued from the Moynalpy and Sanglop Rubber Estates.

Since the close of the financial year, Stockholders have been advised of the sales of tin-ore as follows:—

October 1, 1959, to December 31, 1959	...	...	4,696 piculs (279½ tons)
January 1, 1960, to March 31, 1960	...	...	5,624 piculs (334½ tons)
April 1, 1960, to June 30, 1960	...	...	6,435 piculs (383 tons)

### Joint Mining Area

The purchase of the assets of the French Tekkah Mines jointly by your Company and The Kinta Tin Mines Ltd. was completed and possession taken of this property on April 1, 1959. Plans were immediately put into operation for the reorganization of the system of work on the property, and for the necessary repairs to power stations and transmission lines to ensure maximum power being available for mining operations and to comply with the Electricity Regulations.

An extensive boring programme was also commenced on the newly acquired leases and I am pleased to state that substantial ore reserves have been proved at the Jelantoh Section. As a result of the extensive development and rehabilitation work done during the period under review expenditure in this section exceeded revenue by £1,447.

### Mergers

On October 19, 1959, an offer was made by the Board of this Company to the Board of The Kinta Tin Mines Ltd. to acquire the whole of the Issued Capital of that Company. The Kinta shareholders accepted the Gopeng offer, and the two Companies are now merged, Kinta being a wholly-owned subsidiary of Gopeng.

A major development scheme is now in progress on the property of the merged Companies in order to integrate mining operations more closely. Given adequate water supplies, it is not expected that this transition stage will unduly affect the rate of production, and on completion, improved outputs and other benefits are confidently expected.

The total of the merged Companies' revised assessments, including those of the former French Tekkah property, have been determined at 35,556 piculs as compared with the previous total of 28,296 piculs. The new assessments came into force in the 11th Quota Period commencing July 1, 1960.

The revised assessments are very satisfactory but it must be realized that all the Malayan Mines are being reassessed and, although some will have their 1953/57 assessments reduced, others will receive a considerable increase. The new aggregate of the Malayan domestic assessments is therefore likely to be increased and become larger than hitherto in relation to Malaya's permissible exports under the International Tin Agreement, so that the Malayan domestic rates of quota may be somewhat lower in relation to its permissible exports.

Subject to the continuation of current tin prices and rates of quota, the Company's prospects for the current year, in comparison with those for the financial year under review, are considerably improved.

On May 3, 1960, your Board made an offer to acquire the whole of the Share Capital of Tekka Ltd. not already held

by Gopeng. Acceptance of the Gopeng offer having been received from the holders of more than 90 per cent of the issued Share Capital of Tekka Ltd., the offer has been declared unconditional, and steps are being taken to acquire compulsorily the remaining Tekka shares in accordance with the provisions of Section 209 of the Companies Act.

A major benefit which Gopeng will in due course derive from the acquisition of the assets of Tekka Ltd. will be the use of the Tekka water supply on Gopeng's northern leases, thus enabling



this area to be mined without the diversion of water required elsewhere on the property. In due course arrangements will be made for the extension of the Tekka pipe line to the area in which the water will eventually be used.

In view of the recent mergers with Kinta and Tekka, the existing Articles of Association of your Company are no longer entirely appropriate, and an Extraordinary General Meeting will be called in September when the proposal to adopt new Articles will be put to Members. In this connection, a circular and a notice convening the meeting will be issued to Stockholders in due course.

#### International Tin Agreement and its Effect on the Company's Operations

During the whole of the year under review, your Company's operations have been subject to the provisions of the Malaysian Tin Control Regulations and the Company's quota has varied between 42.9 per cent. and 51.6 per cent. of the total of its assessments based on the average annual production during the years 1953/57; in addition, quota was made available from within the Group under the same general management on a profit-sharing basis, and allocations were also received from the Common Surrender Pool, under the Tin Control Regulations. Since the end of the financial year there have been progressive increases in the rates of quota and the rate for the quarter ended June 30 was 81.41 per cent.

By the end of the financial year this Company's compulsory contributions to the Buffer Stock amounted to £69,675. I am pleased to be able to report that on August 27, 1959, the requirement that all Malaysian Tin Producers should contribute to the Buffer Stock terminated. It seems reasonable to expect that the Producers will receive a refund in the foreseeable future of at least a substantial part of the contributions made by them to the Buffer Stock.

During the year under review the total permitted tonnage exportable by the six producing countries participating in the International Tin Agreement rose from 20,000 tons in the quarter October/December, 1958 to 25,000 tons in the last quarter, July/September, 1959. For the current quarter the total exportable tonnage for the six producing countries is fixed at 37,500 tons, and of this Malaya's share is 38.2 per cent.

The present International Tin Agreement will expire on June 30, 1961, and the desirability of its renewal, and if so in what form, had to be decided by the International Tin Council and recommendations made by it to the contracting Governments not later than June 30, 1960.

The 1960 World Conference on Tin has recently been in session at the United Nations in New York, at which a Malaysian Delegation, comprised of Government Officials and representatives of the Malaysian Mining Industry, participated.

It is now known that a new Tin Agreement has been approved at the Conference which, provided it is ratified by at least 15 member countries, of which not less than nine must be consumers, will operate for five years from July 1, 1961.

The text of the proposed new Agreement is not yet known but it is reported that the Buffer Stock will be fixed at a maximum of 20,000 tons instead of at 25,000 tons as in the present Agreement. It is further reported that it is proposed that the New Agreement shall follow the existing one in providing that export controls are to be imposed only when the Buffer Stock contains at least 10,000 tons of metal.

It would appear, unfortunately, that both the United States and Russia will continue to remain outside the agreement and it is to be hoped that the first-named country will continue its policy

of "benevolent neutrality" and that Russia will maintain the voluntary limit on exports which it has accepted since the beginning of last year.

It is also reported that Japan and Western Germany who were not signatories to the present Agreement, have decided to join the new one.

Your Directors again have pleasure in placing on record their appreciation of the services rendered by the General Managers, Resident Manager, and the Staff at the Mine during the year under review.

The report and accounts were adopted.

## GOLD & BASE METAL MINES OF NIGERIA

The twenty-sixth annual general meeting of Gold & Base Metal Mines of Nigeria, Ltd., was held on July 28 in London.

Mr. C. J. Burns, Chairman, presided, and the following is an extract from his circulated Statement:—

The results of our financial year to December 31, 1959, show a marked improvement over those of the previous year and the profit of £57,021 compares with the figure of £5,526 in a year when no provision for depreciation was made. As a result of the improved financial position of the Company a dividend of 7½% is recommended for the approval of members.

The greatly increased revenue during the year is in part due to higher permitted sales of tin ore under the operation of the International Tin Agreement, and also to the improvement which occurred in the demand for columbite, thus enabling us to sell not only that part of our production which could be shipped during the year but also the unsold stocks carried forward from previous years. Our actual sales during the year were 454½ tons of tin ore which realized an average price of £788 per ton metal, and 98 tons of columbite which realized an average price of £1,003 per ton metal.

#### Production

Our production targets for tin were raised during the year to match the progressive increase in exports permitted under the International Tin Agreement, the quarterly details of which are given in the Consultants' Report and which totalled 454½ tons tin ore. Our actual production totalled 541 tons so that the difference was added to the stocks we were permitted to hold in Nigeria and which at the year end totalled 183 tons, representing £61,536 at cost. The Company was thus well placed to meet the increases in exports which have since been granted.

Columbite production, following first the reopening and thereafter the expansion of operations at Liruie, totalled 70 tons.

For the current year, production targets have been set at 780 tons tin ore

and 75 tons of columbite, with 4 tons of tantalite as a by-product. Actual production for the five months to May 31 has totalled 319 tons of tin and 37 of columbite. It is possible that our columbite target may be exceeded by a small margin. Contracts for the sale during 1960 of 70 tons of columbite have already been negotiated.

#### Outlook in Nigeria after Independence

Politically, 1959 was an important one for the Federation of Nigeria. In May, Northern Nigeria followed Eastern and Western Nigeria in being granted self-government. Towards the end of the year, general elections were held throughout the country, the main issue being one of independence, and this has since been formally granted and will take effect on October 1, 1960. The orderly and peaceful manner in which these elections were conducted, in spite of the many problems involved, is an encouraging indication of the progress being made towards nationhood.

Independence to a country, however, brings its own problems and responsibilities. One of the effects on the mining industry, as to others, will probably be increases in cost both direct and indirect. Further improvements in conditions of service were accorded to our Nigerian labour towards the end of 1959, and there is, inter alia, a proposal for a national provident fund to take effect from October 1, next. These increasing costs must be met by improved methods of production and greater efficiency and, although our direct costs of production are likely to show an increase on those for last year, it is anticipated that these will be largely offset by higher output.

At this important landmark in the evolution of Nigeria, we extend our congratulations and good wishes to the Government of the Federation and to its peoples, and also to the regional governments, and we look forward with confidence to continuing our close and harmonious association, and we hope to continue to play our part in the development and well-being of the country.

The report and accounts were adopted and the dividend approved.

estimated that the company's existing indebtedness including the Notes can be repaid before June 30, 1965, providing that the average yield per ton milled has risen to 8.1 dwts. of gold in the year to June 30, 1963. The technical advisers think it reasonable to expect that this figure may, in fact, be surpassed. The opinion is expressed that dividends may be possible before repayment of the loans and Notes.

Meanwhile, Saaiplaas 10s. shares hang somewhat dispiritedly around par. What is really needed here is a marked improvement in reef development results. As already stated, the new money is guaranteed because the 6,000,000 shares are being taken up by a syndicate headed by Gold Fields. Share and Note holders registered on August 22 may participate if they wish. Closing date is September 16. Application forms will be posted on August 31.

## TWO MORE O.F.S. SHAFTS

Free State Geduld and Western Holdings, the two high-grade O.F.S. gold mines in the Anglo American group, are each to sink a new shaft. That of F.S.G. will be adjacent to the new 1A ventilation shaft in the south-western corner of the property. It will be a 24-ft. hoisting shaft put down to a depth of 5,000 ft. at a cost including rail transport to the mill of £2,900,000. The money is to be found from profits. The reason for the new shaft is that further drilling and development in this vicinity, where exceptionally rich reef values were met with early last year, have shown that a major portion of the area lies at a higher elevation than at first thought. It is now regarded as being difficult and costly to mine from the No. 1 shaft as originally intended. Free State Geduld should be able to find the money comfortably from earnings and still pay good dividends.

The Western Holdings shaft will be 20 ft. in diameter, the depth 4,500 ft. and the cost £800,000, also to be found from profits. It will be used for ventilation upcast purposes and will be put down near the No. 1 shaft, the ventilation facilities in which will then become wholly downcast. It should almost double the ventilation available in this northern part of the property enabling its more extensive exploitation, including the area to the north-west towards the common boundary with F.S.G. where a borehole yielded 2,414 inch-dwts.

## TANJONG AND GOPENG

The chairman of Gopeng Consolidated, Major W. E. Hosking, details some benefits that will accrue to this Malayan tin producer from its big take-over programme of recent times, which looks like establishing it as one of the lowest-cost properties for many decades to come. It will, of course, take time for the full benefits of this major expansion to be reaped but Mr. Hosking says that the prospects for the current financial year to next September are "considerably improved". Gopeng has so far paid three interims for 1959-60 totalling 1s. 1½d. on the higher capital resulting from the acquisitions compared with a distribution of 10½d. for the whole of last year. If all remains well in the world of tin it will be during 1960-61, however, that payments should really begin to reflect the company's new status. (Statement page 130.)

The chairman of Tanjong Tin Dredging, Mr. A. G. Glenister, says in his annual statement (page 132) that revised Malayan assessments under the International Tin Agreement have meant a rise from 17,517 piculs per annum to 20,097 piculs in this particular company's figure

## TANJONG TIN DREDGING

### MR. A. G. GLENISTER'S STATEMENT

The 34th Annual general meeting of Tanjong Tin Dredging, Ltd., was held on July 28 in London.

Mr. A. G. Glenister, Chairman, presided, and the following is an extract from his circulated Statement:—

The Accounts for the year ended December 31, 1959, show a net profit, after charging £62,000 taxation, of £115,701 as compared with £78,355 for the preceding year. After writing the sum of £8,817 off Fixed Assets and setting aside £15,672 against Buffer Stock contributions paid during the year, the balance carried to the Appropriation Account amounts to £91,212.

Four interim dividends equivalent to 1/9 per share on the increased capital have already been paid on account of 1959 and your Directors recommend a final dividend of 3d. per share payable on August 20, 1960. This will bring the total distribution for the year up to 2/- per share (less Income Tax) on the increased capital and will mean that £91,058 has been paid in dividends to shareholders for 1959 as against £60,163 for 1958. The sum of £19,602 is carried forward to the following year. The contributions to the Buffer Stock ceased on August 27, 1959. By this time, the Company's total compulsory contributions had amounted to £88,526 which is frozen until such time as the Buffer Stock is wholly or partially liquidated. It is your Board's view that, whatever arrangements may be necessary to provide a

Buffer Stock under any new Agreement, producers are entitled to look for the repayment of the whole, or at least a very substantial proportion, of the extremely large sums which they alone have been compelled to contribute (in addition to the heavy degree of restriction of output which they have suffered) to the maintenance of a price level and availability of stocks which are as much, if not more to the benefit of consumers as of producers.

Under the Malayan Control Regulations, the sales of tin-ore were 585 tons and the yardage treated was 2,440,400 cubic yards, the corresponding figures for 1958 being 488 tons sold and 2,837,500 cubic yards treated. The average price obtained for the tin-ore sold was £483 per ton against £449 in 1958. The output was produced by Dredge No. 2 which again had to be closed down from time to time during the year in order to keep production within the permissible limits allowed under the Malayan Tin Control Regulations.

As shareholders are no doubt aware, the assessments of all the individual Malayan Mines are now in the process of revision and I am happy to say that the revised assessment of your mine will, as from July 1, 1960, be 20,097 piculs compared with the assessment in existence to the end of June of 17,517 piculs.

The report and accounts were adopted.

## LONDON METAL AND ORE PRICES, JULY 28, 1960

### METAL PRICES

Aluminium, 99.5% £186 per ton	Magnesium, 2s. 2½d./2s. 3d. lb.
Antimony—	Manganese Metal (96%)/98% £275/£285
English (99%) delivered, 10 cwt. and over £190 per ton	Nickel, 99.5% (home trade) £600 per ton
Arsenic, £400 per ton	Osmium, £20/£25 oz. nom.
Bismuth (min. 1 ton lots) 16s. lb. nom.	Osmiridium, nom.
Cadmium 10s. 6d. lb.	Palladium, imported, £8 12s. 6d.
Cerium (99%) net, £15 0s. lb. delivered U.K.	Platinum U.K. and Empire Refined £30 5s.
Chromium, Cr. 99% 6s. 11d./7s. 4d. lb.	Imported £284/288
Cobalt, 12s. lb.	Quicksilver, £70/£70½ ex-warehouse
Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram	Rhodium, £44/£48 oz.
Gold, 250s. 1½d	Ruthenium, £14/£20 oz. nom.
Iridium, £23/£26½ oz. nom.	Selenium, 50s. 0d. per lb.
Lanthanum (98%)/99% 15s. per gram.	Silver, 79½d. f. oz. spot and 79½d. f'd
	Tellurium, 25s. 0d. lb.

### ORES AND OXIDES

Antimony Ore (60%) basis .. .. .	20s. 6d./21s. 6d. per unit c.i.f.
Beryl (min. 10 per cent BeO) .. .. .	235s./240s. per l. ton unit BeO
Bismuth .. .. .	65% 8s. 6d. lb. c.i.f.
	18/20% 1s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semifriable 48%) (Ratio 3:1) .. .. .	£15 5s. 0d. per ton c.i.f.
.. Hard Lumpy 45% .. .. . (Ratio 3:1) .. .. .	£15 10s. 0d. per ton c.i.f.
.. Refractory 40% .. .. .	£11 0s. 0d. per ton c.i.f.
.. Smalls 44% .. .. . (Ratio 3:1) .. .. .	£13 5s. 0d. per ton c.i.f.
Baluchistan 48% .. .. . (Ratio 3:1) .. .. .	£11 15s. 0d. per ton f.o.b.
Columbite, Nigerian quality, basis 70% combined pentoxides (Ratio 10:1) .. .. .	Nb <sub>2</sub> O <sub>5</sub> : Ta <sub>2</sub> O <sub>5</sub> 180s./185s. per l. ton unit c.i.f.
Fluorspar—	
Acid Grade, Flotated Material .. .. .	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF <sub>2</sub> ) .. .. .	156s. 0d. ex. works
Lithium Ore—	
Petalite min. 34% Li <sub>2</sub> O .. .. .	50s. 0d./55s. 0d. per unit f.o.b. Beira
Lepidolite min. 34% Li <sub>2</sub> O .. .. .	50s. 0d./55s. 0d. per unit f.o.b. Beira
Amblygonite basis 7% Li <sub>2</sub> O .. .. .	75s./85s. per ton f.o.b. Beira
Magnetite, ground calcined .. .. .	£28 0s./£30 0s. d/d
Magnetite Raw (ground) .. .. .	£21 0s./£23 0s. d/d
Manganese Ore Indian—	
Europe (46%-48%) basis 67s. 6d. freight .. .. .	73d./75d. c.i.f. nom.
Manganese Ore (43%-45%) .. .. .	69d./71d. c.i.f. nom.
Manganese Ore (38%-40%) .. .. .	nom.
Molybdenite (85%) basis .. .. .	8s. 11d. per lb. (f.o.b.)
Titanium Ore—	
Rutile 95/97% TiO <sub>2</sub> (prompt delivery) .. .. .	£28 0s. 0d. per ton c.i.f. Aust'n
Ilmenite 50/52% TiO <sub>2</sub> .. .. .	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%) .. .. .	156s./162s. per unit c.i.f.
Vanadium—	
Fused oxide 95% V <sub>2</sub> O <sub>5</sub> .. .. .	8s./8s. 11d. per lb. V <sub>2</sub> O <sub>5</sub> c.i.f.
Zircon Sand (Australian) 65-66% ZrO <sub>2</sub> .. .. .	£16/£16 10s. ton c.i.f.



## RHODESIA-KATANGA COMPANY LIMITED

### MR. MICHAEL EASBY'S REVIEW

The Annual General Meeting of Rhodesia-Katanga Company Limited was held on July 21, 1960, at The Chartered Insurance Institute, E.C.2. Mr. Michael Easby, F.C.A. (Chairman), presiding, paid tribute in his Review to his predecessor the late Mr. Christopher Holland-Martin, and gave the latest available information regarding the Kansanshi Mine.

He recalled that the known tonnage of ore at the time that the Kansanshi Mine was flooded comprised 438,000 tons sulphide, 256,000 tons high grade oxide and 2,233,750 tons low grade oxide, and that in October 1959 the conclusion was reached that no process at present existed for the economic treatment of the low grade oxide ore. Tests had therefore been made, which were still continuing, on the basis of processing the sulphide ore with the high grade oxide to produce a small monthly tonnage of copper, leaving the low grade oxide for future reconsideration. Meanwhile, the Consulting Engineers were making an economic appraisal of the possibilities of resuming operations on this basis. Consideration would then be given to the de-watering of the mine at an estimated cost of some £100,000, the finance for which would be provided by the Kansanshi shareholders by means of interest-free loan facilities. In the event of these preliminary operations proving successful, the Kansanshi Board would take steps to procure the capital required for the re-equipment of the Mine from their shareholders, and the Rhodesia-Katanga Company would require to raise additional finance in order to provide its 35.24% proportion. Tanganyika Concessions Limited had undertaken to provide the necessary financial backing for these purposes.

The report and accounts were adopted.

## Company News

Dowty Seals, of Ashchurch are building a new factory, to be completed early next year. Administration, design, research, test, development and part of the production facilities will be housed in the new building, which will supply seals to the various Dowty Group Companies.

\*

In our issue of July 8, p. 58 reference was made to a display of equipment being arranged by the Swedish Diamond Rock Drilling Co. and AB Elektrisk Malmletning to run concurrently with the International Geophysical Congress in Copenhagen. We are asked to point out that this display is being held in Stockholm for the benefit of those geologists from the congress who are visiting Sweden.

\*

Alcoa International (U.K.) Ltd., announce the opening of their London office at Gulf House, 2 Portman Street, London, W.1. Telephone Mayfair 9773. Cables: Alcoaint, London.

## EAST RAND CONSOLIDATED

The thirty-fourth annual general meeting of East Rand Consolidated, Ltd., was held on July 26 in London.

Mr. C. J. Burns, Chairman, presided, and the following is an extract from his circulated Statement:—

The Accounts for the year to December 31, 1959, show a profit, before taxation and appropriations, of £83,432 compared with £58,571 for 1958. In view of the continued rise which took place during 1959 in nearly all classes of shares, a higher profit was to be expected but it is also worthy of note that all three sources of our revenue showed an increase. Dividends and interest received on our investments totalled £47,351; profit on sales of shares, etc., amounted to £44,251, while sundry revenue was higher at £5,132.

It will have been noted that at the year end our quoted investments had a market value of £831,027 against a book cost of £597,446. This appreciation over book cost has, in recent weeks, shown some decline as evidenced by the information given in the Directors' Report. Sundry revenue includes a royalty income arising from a farm in the Union of South Africa, on which we hold the mineral rights. We anticipate that the income from this source will rise materially in the next few years.

Members will naturally be concerned as to the future probable value and security of their share interest in the Company in view of current events in South Africa. In recent years the Directors have been following, as practicable, a policy of widening the sphere of this Company's interests which were at one time situated wholly within the Union. At the present time less than 18% of our quoted investments represent Companies operating in that part.

The present troubles have not fundamentally changed the political background of South Africa, but have merely highlighted the risks inherent to investors within the country. Until, however, some of the basic problems now so drastically underlined have been resolved satisfactorily for all concerned, a higher rate of return is likely to be required by investors and this will result in lower stock market valuations than were seen during 1959.

The report and accounts were adopted and the dividend of 10% approved.

**MINING ENGINEER** required for an Iron Ore Mine in Goa, Portuguese India. Applicants should be between 30/40 and preferably with four years experience in Iron Ore Surface Mining. Candidates should be Corporate Members of the Institution of Mining Engineers or equivalent. The contract will be for three years and free living accommodation and transport is provided. There would be, however, six months probationary period before wife and family could join the successful applicant. Applications should be accompanied by a recent photograph and addressed to Personnel Officer, Ewbank & Partners Ltd., 10-11 Grosvenor Place, S.W.1.

## MINING TENDERING AND CONTRACTS ENGINEERS

ENGLISH ELECTRIC

STAFFORD

The Company wishes to appoint a number of electrical engineers to undertake technical co-ordination work at the tendering and contract stage in our Mining Division.

Applicants should have experience of mining electrical equipment particularly winders and associated control and protection gear.

Possession of a Higher National Certificate (Electrical) or equivalent qualification is desirable.

Junior Engineers who are studying for their H.N.C. (E) and are considered to have the ability to do this work are also invited to apply.

These are pensionable staff appointments. Careful consideration will be given to the housing problem, where possible.

Please write giving full details to Dept. G.P.S., Marconi House, 336/7 The Strand, London, W.C.2. quoting reference M.J. 1297L.

### "M.J." SEEKS EDITOR

As part of a gradual redistribution of editorial appointments to its three publications, *The Mining Journal* wishes to engage an additional experienced journalist next January or sooner with a view to his assuming the Editorship of its international weekly in the latter part of 1961.

**ESSENTIAL QUALIFICATIONS:** Proved editorial and leader-writing competence in the field of international industrial economics and finance; and facility in viewing problems from standpoint of men in the boardroom and in government and in mixing with them. Previous mining industry experience advantageous but not essential as Deputy would be Technical Editor.

**SALARY AS EDITOR:** £2,000 up. Contributory Pension Scheme.

**APPLICATIONS IN CONFIDENCE to:** The Managing Director, *The Mining Journal*, 15 Wilson Street, London, E.C.2.

## MINING MISCELLANY

The Bolivian Mining Corporation (Comibol) is seeking U.N. assistance for carrying out new surveys of selected Bolivian metal reserve areas, some of which are only accessible by air. Comibol said that the country's present mines were nearing exhaustion, particularly in the case of tin, where present seams would be worked out by 1964 or 1965.

★

The value of mineral exports from Tanganyika Territory for the first five months of 1960 was £2,683,895, 57 per cent above the figure for the same period for 1959. A substantial part of this increase was due to diamond and lead exports. Diamonds worth over £1,500,000 were produced during the period, and lead concentrates rose in value from £300,000 in 1959 to £600,000.

★

The Soviet Central Statistics Administration has announced that for the first six months of this year coal and lignite (including coking coal) production amounted to 257,000,000 tonnes.

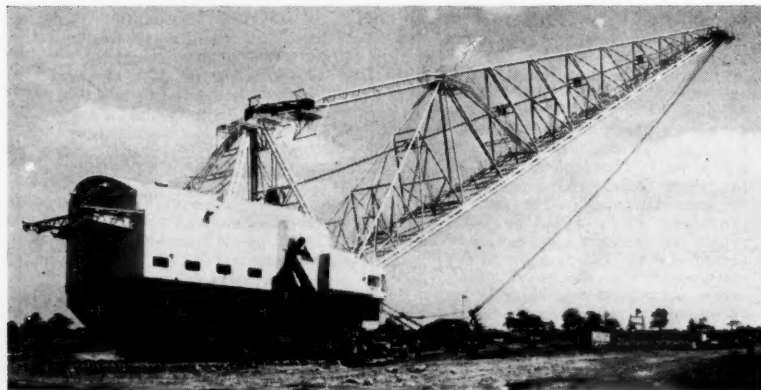
★

The Oost-Borneo Mining Co., in their report for 1959, report the conclusion of an agreement with a North American concern for prospecting and mining operations in the Carstentz mountains in New Guinea, where there were indications that copper and gold might be found.

★

Coal deposits in Sanchez Province, Dominican Republic, are being examined by the government's Minerals Commission, in order to assess their extent, and decide whether large scale commercial exploitation would be practicable.

A 1,750-ton dragline has just been installed by Stewarts and Lloyds Minerals Ltd., at their Cowthick ironstone quarry near Corby, Northamptonshire. Purpose is overburden removal. The 303 ft. long jib, designed and built by Tubewrights Ltd., in co-operation with Ransome and Rapiers Ltd., is 185 ft. above the ground at the head, 15 ft. higher than Nelson's Column. It has a dumping radius of 280 ft., the 22 cu. yd. bucket digging approximately 33 tons a fill. Manufacture of the £750,000 machine began at Ransome and Rapiers Ltd. early in 1957. The new dragline has a slightly larger boom than the company's other walking dragline in the Corby area



New iron ore deposits are reported to have been discovered in the north of the Russian area of Tajikistan, where reserves are estimated at between 250,000,000 and 300,000,000 tonnes. Local processing of the ores is planned to begin soon. Other news of Russian iron ore production is that by 1965 some 30,000,000 tonnes will be produced in Kazakhstan annually. The Sokolove-Sarbai ore processing plant is now to be brought into full use two years earlier than originally planned. Ferrous metals combines in Magnitogorsk, Chelyabinsk and Nishny-Tagil are also to come into commission earlier than planned. Geologists of Khirgizia in the central Tianshan area report the discovery of large iron ore reserves estimated at 5,000,000,000 tonnes, with an iron content of at least 35 per cent, and it is hoped to base a Khirgiz ferrous metals industry on these deposits.

★

A report in the Greek industrial newspaper *Viomichaniki Anayennisis* states that groups of non-Greek industrial interests are following up the possibilities of zinc ore exploitation in Greece.

★

A company, Geotehnika s.o.j. to be based in Athens, has been formed for geological survey and exploration, as a joint venture by the state-owned Elektrosond concern of Zagreb, Yugoslavia and the Doxiades firm of Greece.

★

The Alpine-Montan company closed the Ratten-St. Kathrein brown-coal mine in the Austrian State of Styria in mid-July owing to difficult and expensive exploitation. The mine employed 400 workers, and peak annual production was over 130,000 tonnes.

The Dutch firm, Billiton Maatschappij, announce that its deliveries of Surinam bauxite in 1959 totalled some 716,000 tonnes. It is estimated that 1960 deliveries will be considerably higher, and it is hoped to bring future deliveries to an annual figure of about 1,250,000 tonnes.

★

The Hegyalja Mineral Mines and Mills concern of Hungary report that a new mineral mill for treating beontinite, reputed to be the biggest in central Europe, will be brought into commission next year. This fully-mechanized plant will have a throughput of about 100 tonnes daily, and a store for 3,000 tonnes of raw material attached; heavy-duty dust-suckers will be fitted to prevent risk of silicosis.

★

The 40-hour week, being introduced in the Federal German metal industry, is expected to affect national metal prices. In West Germany the present 44-hour week will be cut progressively. At the same time, some wages are being raised 8½ per cent as from July 1, and by a further 5 per cent as from July, 1961.

★

According to reports from Caracas, the Orinoco Mining Co. of Venezuela has, in the first five months of 1960, shipped about 9,000,000 tonnes of iron ore. This is 2,500,000 more than in the same period in 1959. Exports in the whole of 1959 totalled 14,556,022 tonnes.

★

Uranium ore deposits north of Karlovy Vary, in the Czech region of western Bohemia, are reported to be almost exhausted. Several mines in the area are already closed, and redundant workers from the area are being directed to brown coal workings elsewhere on the Czech-German border.

★

Mr. Ian Dillon, an M.P. for Southern Rhodesia and a partner in the Wanderer Mine at Selukwe, has bought the mine, and has stated that he hopes to start producing gold within the next two months. The mine, one of the oldest gold mines in the country, has not been operating for about ten years.

★

Thai Mines Department officials report that a survey for copper was being conducted in four provinces in central Thailand. Copper would be needed in large quantities for high tension and other wires for the distribution system of the Yanhee hydro-electric plant.

★

Flintkote Co. of the U.S. have reached a basis of understanding with the Province of Newfoundland, providing for acquisition of gypsum reserves on the island, according to the firm's chairman, Mr. Harvey Jr. Under the terms of the understanding, Flintkote would have immediate access to some 40 sq. miles of Newfoundland's gypsum-producing properties at Flat Bay, and subsequently to an area comprising nearly 3,000 sq. miles with a 99-year lease, renewable for an additional 99 years. The gypsum reserve is estimated as at least 200,000,000 tons, and it is intended to supply gypsum and products to U.S. and Canada.

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